WILLKIE FARR & GALLAGHER LLP **MEMORANDUM**

TO: Files

FROM: Willkie Farr & Gallagher LLP

RE: Interview of Hedy Griffiths on October 20, 2005

DATED: November 8, 2005

On October 20, 2005, Michael Schachter and Michael Shapiro, in Willkie Farr & Gallagher LLP's capacity as counsel to the Audit Committee, interviewed Hedy Griffiths from the City of San Diego Wastewater Department, at the City Administration Building ("CAB"), 202 C Street in San Diego, in a conference room on the third floor. Ms. Griffiths was not represented by counsel and nobody else was present at the interview.

The following memorandum reflects my thoughts, impressions and opinions regarding our meeting with Ms. Griffiths and constitutes protected work product. It is not nor is it intended to be a transcript of the interview.

Warnings

Mr. Schachter informed Ms. Griffiths that we represent the Audit Committee and we do not represent any employee personally. He stated that our conversation may be kept confidential and considered attorney work product, but this privilege belongs solely to the City. He informed Ms. Griffiths that the owner of the privilege is the City and the Audit Committee, not her. He stated that we will issue a report which may disclose the substance of the interview, which disclosure she cannot prevent. Mr. Schachter said that the report may be viewed by government officials and therefore it is especially important to be accurate and truthful.

Background

Ms. Griffiths began work with the City of San Diego in 1985, working as a clerk in the Police Department, after receiving a degree in Social Science. She then worked for the equipment division and was transferred after three years to Environmental Services. In 1989, Ms. Griffiths became employed by the Water Department and was involved in wastewater, where she worked on Clean Water Grants and other grants. She was transferred to Special Projects, which became the Metropolitan Wastewater Department, and worked there from 1989 to 1993. Thereafter, she was transferred to the Risk Management Department where she worked for three years. When her position was cut in 1994, she began to work for the Wastewater Department and has been working there ever since. At the Wastewater Department, she handles contracts for the Participating Agencies and both the clerical and computer sections report to her. Ms. Griffiths currently has a staff of seven and does the billing for metro and the City for sewage treatment. She also works on flow monitoring. She reported to Bill Hanley, Deputy Director of Services and Contracts, in 1997.

Wastewater Issues

Mr. Schachter asked Ms. Griffiths to review Exhibits 1 thru 11. She stated that they were familiar and that she has a "pretty good memory of it." Mr. Schachter asked Ms. Griffiths to read Exhibit 1, a December 14, 1994 memo from David Schlesinger re: "Support Requirements for Strength-based Billing for the Participating Agencies" (EA00167-00169). Ms. Griffiths stated that she came back to the Wastewater Department in June 1994 and became involved with agency contracts. She reported to Chuck Mueller, Deputy Director of Services. Within the Metropolitan Wastewater Department, Mueller reported to David Schlesinger. She said that clean water grants are available under the Clean Water Act to help sewage systems upgrade. One of the accelerated grant projects was the Point Loma upgrade. North City was not on line until December 1994 and she was not sure when Point Loma came on line. The South Bay plant went on line only two or three years ago.

Ms. Griffiths said the State Water Resources Control Board ("SWRCB") is an organization to administer and review Clean Water Act grants. She had contact with the SWRCB because the SWRCB audited the 1977 Point Loma grants. She had a dispute with the SWRCB over $22 million in grants and was able to prove the costs. As a result of the dispute, her department received an additional $1.3 million in grants. She was familiar in 1994 with the SWRCB "fair and equitable" guidelines, which means each party pays based on COD, suspended solids, and flow. Ms. Griffiths stated that the "fair and equitable clause" means that you cannot charge other municipalities more than you charge your own customers. She knew it was a requirement of the State in 1994 to pay based on these parameters.

Strength based billing ("SBB") is billing based on strength and flow. It was a team effort to determine how to implement SBB in the Participating Agencies ("PAs"). She worked with Richard Martinez, Bill Butler and the consultants, Montgomery Watson. When asked how she added SBB to the billing for the PAs, she said they did sampling since 1995.

Ms. Griffiths viewed Exhibit 2, a January 31, 1995 letter, revised February 8, 1995, from F.D. Schlesinger to Ronald R. Blair, re: strength-based billing (COS002650-002662). The SBB for the PAs was designed by Bill Butler and the Montgomery Watson Group. There is a State requirement to bill users based on costs for removing organics, for people as well as the PAs. The first job was to deal with sewage treatment costs at the agencies before the costs could be passed on to customers. The next step would involve changing user rates. She focused on the PAs but knew, and she felt Blair may have mentioned, that rates for municipal users needed to be revised as well. She feels strongly that Blair knew that sewer user rates did not include organics. Blair's boss, Frank Peters, was involved in the 1990 revenue plan, which involved flow and SS, and Peters had met with the PAs to tell them why they needed to account for total SS. She said the next step would involve sewage treatment including COD/BOD. She recalls Blair saying something like, "next will come the muni sites." She recently heard gossip from members of her department that Blair was claiming he did not know that sewer user rates did not include organics. She identified these individuals as Mick Gammon and Rich Enriquez. They told her that Blair was aware and knew that the City did not account for organics. She does not recall how they knew about Blair's awareness and knowledge. She later said that she learned from Michael Aguirre's report that Blair claimed not to know about the City's noncompliance

regarding municipal customers. She recalls informing Blair that the structure for municipal customers did not include organics.

Ms. Griffiths reviewed Exhibit 3, Strength-Based Billing Meeting Minutes of March 8, 1995 (COS002647-002648). She does not know what the letters, "SSD" listed after her name mean.

Ms. Griffiths reviewed Exhibit 4, a March 24, 1995 memo from Sudhir Mohleji to William Kennedy, Pete Wong, and Hedy Griffiths re: "Flow/Suspended Solids/BOD Allocation Factors for 1994 Capital and O & M Costs" (EA00067-00069). She was familiar with the three approaches delineated in the memo. The Design Approach involves a design perspective; it aims to build the facility to accommodate processes. The Function Approach involves an operation perspective; it aims to process SS and determine flow. The Functional Design Approach is a combined system and involves both the design and functionality of facilities.

Ms. Griffiths identified Sudhir Mohleji as a Montgomery Watson consultant. Other Montgomery Watson consultants include William Kennedy, Robert Martinez, Victor Occiano, Paul Findly and Bill Butler. She said Montgomery Watson looked at all facilities to designate costs based on SS and COD.

About Exhibit 5, an April 5, 1995 memo from Hedy Griffiths to Alan Langworthy via Charles E. Mueller, Jr., re: "Selection of COD vs. BOD as Basis for Strength-based Billing of PA's" (COS002644-002646), she does not know why the State directed the City to develop a new billing method for PAs. She did not hear anyone say not to change the billing for the City and only change it for the PAs. Mr. Schachter did not ask Ms. Griffiths about Exhibits 6 thru 11.

Ms. Griffiths was asked about Exhibit 12, a May 9, 1995 letter from F.D. Schlesinger to Ronald R. Blair re: strength-based billing for the PAs (DK02266-02276), which referenced Exhibit 13, a September 30, 1994 letter from Ronald R. Blair to City Manager Jack McGrory (DK5453-5454), in which Blair tells the City to include BOD/TSS with the PAs. She is responsible for billing the PAs. The Water Department Customer Information System ("CIS") bills users within the City of San Diego and sets industrial rates, as well. She noted that Q equals flow. She vaguely remembers the May 9, 1995 letter. Mr. Schachter asked Ms. Griffiths about page DK2271 and what the second paragraph entitled, "Systemwide Q/SS/COD Totals," means. She said that a system-wide basis means that all facilities are involved. A system-wide basis looks at the regional system as a whole regarding flow/SS/COD and, based on a sampling, the costs for the individual PAs are determined. The May 9, 1995 letter did not tell Blair that system-wide sampling would mean revised rates for users within the City.

Ms. Griffiths prepared Exhibit 14, an August 18, 1995 memo from Hedy R. Griffiths to Bill Hanley regarding SWRCB Feedback - EPA Grant Project No. C-06-1092 (DK02310-02311). She knew grants could be taken away if requirements were not fulfilled. She prepared page two (DK02311) to make Hanley aware of that and to emphasize it. She was reporting to Hanley in August 1995 and had been reporting to him since July 1995.

Ms. Griffiths explained the issue of "right of way" payments. She said right of way payments involve costs associated with handicapped curbing. If metro is tearing up sewage lines, it would put in a handicap curb in the road for wheel chairs. The PAs objected. The City conceded the issue and does not charge the PAs for "right of way," but municipal customers pay for the costs involved.

Mr. Schachter asked Ms. Griffiths about Exhibit 15, a January 23, 1997 facsimile from Mike McKee of Chester Engineers to Ms. Griffiths re: "Information for Sewer Cost of Service Study" (COS007386-007388). Ms. Griffiths responded that the Sewer Cost of Service Study was implemented in Fiscal Year 1998 for the PAs, six months before a Cost of Service Study was done for San Diego City residents. Chester Engineers came out to see SBB for the PAs and Griffiths explained to them how it was done for the PAs. Chester Engineers later became Pinnacle.

Ms. Griffiths reviewed Exhibit 16, a March 14, 1997 e-mail from Hedy Griffiths forwarding a March 12, 1997 e-mail from Corinne (Smith) to Debbie (VonWaselle) re: "the possibility of adding COS criteria into the sewer rate structure and CIS" (COS002099). Corrine Smith handles industrial and commercial customers in the Water Department. Smith provides these customers with the correct classification but does not establish the charges. In 1997, Rod Rippel established the charges. The "Debbie" in the e-mail is probably Debbie VonWaselle, Deputy Director of Water Department Services. She said "Jerry" is probably Jerry Williams or Jerry White from the Water Department. Dennis Kahlie handles rate structures. CIS is the Customer Information System which calculates and charges the sewer rates for people inside San Diego. Ms. Griffiths and Robert Martinez from Montgomery Watson were working on dealing with the sewer rate structures with the PAs.

Ms. Griffiths prepared Exhibit 17, minutes of a Sewer Classification Meeting held on March 18, 1997 (COS002100-002101), but does not recall the meeting. She was asked to provide her input regarding the municipal customers, even though they were not her responsibility. Dennis Kahlie and Phil Moffitt hired Chester Engineers. Corinne Smith still works for San Diego, but Mary McKinnon has since left San Diego's employ. Armando Villarino still works for the City. The purpose of the meeting was to discuss the need to implement SBB for municipal customers. Smith was involved in the effort to implement SBB for municipal customers, working with Kahlie and Martinez, probably at the request of Jerry White. In implementing SBB for municipal customers, Ms. Griffiths believes Smith was working under Jerry White, in association with Kahlie.

Ms. Griffiths reviewed Exhibit 18, handwritten notes dated July 24, 1997 (COS2104). The notes were not hers, but may be Mary McKinnon's.

Ms. Griffiths reviewed Exhibit 19, an August 8, 1997 memo from William J. Hanley to Coleman Conrad re: "Implementation of Strength Based Billing" (COS002108-002109). She is copied on the memo and it relates to billing municipal customers. The Financing Services Staff are Kahlie and Moffitt. She said that the proposed schedule for implementation was "unreachable."

Ms. Griffiths reviewed Exhibit 20, an August 13, 1997 letter from Hedy R. Griffiths to Ron Blair re: "First Quarter Fiscal Year 1998 Invoice to Participating Agencies." In her correspondence with Blair, she dealt with the PAs so the letters did not include municipal customers. She does not know if Blair was receiving separate letters regarding municipal customers.

Ms. Griffiths reviewed Exhibit 21, a September 22, 1997 letter from Ronald R. Blair to Hedy R. Griffiths re: "approval of a draft revenue program" (MWWD-BH0222-0223). The letter was sent to her by mistake and should have been sent to Mick Gammon, who oversees Enriquez and the SRF grant/loan process. Before she worked with agency contracts, she was involved with grants. She sent Exhibit 21 to Hanley, Gammon, and Enriquez, and noted that her handwriting appears on the document. The SRF requirements are different than the grant requirements, but she does not know what they entail. She said that the user rate structure must be compliant with SRF guidelines.

Ms. Griffiths reviewed Exhibit 22, undated handwritten notes (DK5423). It was not her handwriting.

Ms. Griffiths stated that there was no pressure to delay rate structure changes for the PAs. She did not hear of pressure to delay changing municipal user rates.

Ms. Griffiths stated that Exhibit 23, an August 31, 1998 letter from Hedy R. Griffiths to Ronald R. Blair enclosing a fully executed Regional Wastewater Disposal Agreement between the City of San Diego and the Participating Agencies in the Metropolitan Sewerage System (SWRCB0375-0386), meant that the work was done regarding the PA billing, as of July 1, 1997. She received a response letter from Blair that said the Agreement and billing "looked fine to him."

Mr. Schachter asked Ms. Griffiths about Exhibit 24, an October 26, 1998 letter from F.D. Schlesinger to Stephen A. Zapoticzny of Monsanto Company re: "Cost of Services Study for Municipal Wastewater Services" (MWWD-BH0891). She was copied on the letter. She thought she would be more involved in the municipal Cost of Service Study, but Hanley did not keep her involved. She does not know why Schlesinger says in the October 26, 1998 letter that the COSS for Municipal Wastewater Services is in the process of being completed.

Mr. Schachter asked Ms. Griffiths about Exhibit 25, the City of San Diego Sewer Cost-Of-Service Report, dated May 14, 1998 (MWWD-BH0950-0991). She read it in 1998. It said that sewer user rates needed to be changed. She knew there was a requirement to include organics but did not know it would make a difference in the classifications until this COSS.

Mr. Schachter asked Ms. Griffiths about Exhibit 26, a November 12, 1998 e-mail from Bill Hanley to George Loveland, Dave Schlesinger, and Susan Hamilton, re: "Meeting With Kelco - Strength Based Billing" (MWWD-BH0930). She did not attend the meeting but heard about it. Mr. Schachter asked Ms. Griffiths whether elected officials were backers of Kelco. She was not aware of that, nor was she aware of Kelco causing any delays.

Mr. Schachter asked Ms. Griffiths to review Exhibit 27, a November 18, 1998 memo from City Attorney (Ted Bromfield) to Bill Hanley, cc: Griffiths, re: "System Charges Requirements" (COS004727-004729). She recalls receiving the memo and providing input as to which requirements Bromfield should list. She does not know why Bromfield prepared the memo. She surmised that perhaps Kelco was asking why SBB was needed. Bromfield copied her on the memo because she worked with the PAs and implemented SBB for the PAs. She has a vague recollection of being involved in pulling Bromfield's list of requirements together.

Mr. Schachter asked Ms. Griffiths about Exhibit 28, a November 24, 1998 letter from William J. Hanley III to David McKinley of Monsanto Kelco Company, ccing George I. Loveland, Dave Schlesinger, Susan Hamilton, Alan Langworthy, Hedy Griffiths and Monica Ramos, re: "Strength Based Billing; Allocation Factors Based on Functional-Design Approach" (MWWD-BH0892-0894). She expressed familiarity with the letter. She said that Kelco was asking for the functional design methodology. Black & Veatch was hired to justify the functional design method until everyone agreed it was proper. Kelco was trying to find fault with the methodology. She heard that Kelco wanted to only be charged for Point Loma and not the system as a whole. She thought Hanley thought that the rates should be changed and did not tell her of any pressure to do otherwise.

Mr. Schachter asked Ms. Griffiths about Exhibit 29, a December 30, 1998 e-mail from Griffiths to Hanley re: "SWRCB - Ron Blair and Kelko" (MWWD-BH0927). She spoke with Blair to "give him a heads up that Kelco was calling." She documented that fact and let Hanley know. She said that Blair knew the Cost of Service Study was being done and had not been implemented for municipal users. She indicated that Blair thought BOD was a component for municipal customers already but BOD was not included at that time. Blair called to inform her of Kelco's concerns. Kelco wanted to be charged individually instead of as part of the system as a whole. She said customers were not charged based on what plant they used. Barbara Sharatz did a matrix and monitored it; if more than 25,000 gallons per day were used, the user was looked at individually. She said Blair refers to Kelco as being charged a higher rate for BOD. Blair supported San Diego in looking at the system instead of the individual for determining rates. This system had been implemented for all of the PAs, in which they were charged based on the system, not based on where their flow goes. By building water reclamation plants, San Diego avoided secondary treatment at Point Loma.

Ms. Griffiths reviewed Exhibit 30, a January 15, 2002 letter from Black & Veatch Corporation to Dennis Kahlie, enclosing a Sewer Cost of Service and Rate Design Report (MWWD-BH0287-0351). She had never read it before.

Ms. Griffiths reviewed Exhibit 31, a May 15, 2000 e-mail from Sharon Brown to Hedy Griffiths re: "the Cost of Service Study." Sharon Brown used to work for her to deal with the municipal side of the Cost of Service Study. Hanley later decided that Griffiths and Brown did not need to be involved. Ms. Griffiths was involved through October of 2000 with the Stakeholders Group, but does not understand why she was not involved throughout the COSS. Black & Veatch was working on the Cost of Service Study and asking her functional design questions. The Stakeholders were supposed to be municipal customers impacted by the rate. She noted that Kelco was part of the Stakeholders Group.

Mr. Schachter asked Ms. Griffiths about Exhibit 32, the Black & Veatch Sewer Cost & Rate Design Services proposal of February 2000 (COS002197-002247), which stated that the COSS was to be completed by October 2000, but the draft Black & Veatch report did not arrive until November 2001. He asked what caused the delay. She said that she heard that Kelco complained about the functional design method and she received requests from Black & Veatch regarding the functional design methodology. She was "taken off" the project in the beginning of the stakeholder process in 2000. After she was no longer involved, she heard objections from Kelco, which she termed "stalling." She never saw the June 2002 Black & Veatch report. She heard from Hanley that the Cost of Service Study had been completed. The Cost of Service Study was not implemented until mid-2004 and she did not hear why it was delayed.

Mr. Schachter asked about whether Kelco provided anything of value, including campaign contributions, to government officials. She never heard of Kelco giving anything to City elected officials. She does not remember hearing about contributions from Kelco.

Ms. Griffiths does now know why the 1998 Pinnacle study was not implemented and why San Diego hired Black & Veatch. She said she never reviewed bond documents. The lack of compliance with municipal customers is not disclosed in the bond disclosures but she did not hear about that until recently, from reading the newspaper. She has not spoken with anyone regarding the bond disclosures or delays. Bond financing and Cost of Service Study implementation were not "her area."

Mr. Schachter asked Ms. Griffiths if she had any other information that she felt we should know. She had no other information about wastewater issues. She said she believed the Council knew what it was doing when it took the pension and misused it. She was employee benefits manager in 1996 and "it," presumably MP1, sounded like a win/win situation. Employees would receive better benefits in exchange for dealing with the market slump. At the time, she asked a lot of questions about the cap to protect benefits. After 1996, the Council "got greedy." The Council "couldn't be that stupid" and knew the pension had to be funded actuarially. She said it was not the employees who made the decisions to get more money.

Mr. Schachter requested that Ms. Griffiths keep the substance of the interview confidential. The interview took place for approximately three hours, from 9 a.m. to about noon.

WF&G

EXHIBIT 1

cc: Pete Wong

City of San Diego
METROPOLITAN WASTEWATER DEPARTMENT
MEMORANDUM
533-4200

In reply, please refer to Chronological Number:
CWP- 126124

Neil,
FYI & Files
Pete W
12/20/94

DATE: December 14, 1994

TO: Distribution List

FROM: Dave Schlesinger, Director MWWD, MS 905

SUBJECT: Support Requirements for Strength-based Billings for the Participating Agencies

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One of the specific grant conditions which the City agreed to meet when we accepted EPA and State Clean Water grant funds was to convert our current flow-based billing practices for the Participating Agencies (PA's) to include a strength-based billing component (i. e., suspended solids/BOD charges in addition to the existing flow-based charge). I have assigned the MWWD Support Services Division (SSD) the responsibility for implementing flow and strength-based billing for the PA's for FY 96.

In order to meet this deadline, SSD requires help from various other divisions. The purpose of this memo is to identify appropriate divisions which will need to provide support to SSD. I am directing each division head to work closely with SSD and provide staff and other resources as necessary to assist in the implementation of the billing effort.

SUPPORT REQUIREMENTS

The attached exhibit identifies the divisions which need to work closely with and provide support to SSD in implementing the new billing approach, and provides a brief description of the type of support required for this effort. The following tasks need to be completed by the team:

- Establish a team and project/team leaders (administrative and technical), develop a workplan and schedule, including specific assignments to carry out the tasks outlined below.
- Prepare a technical document (to be produced by the MWWD/PM engineering staff) which provides engineering justification for the treatment parameter percentages for each unit process.
- Develop a computer-based allocation model to accumulate sampling data, allocate capital and O&M costs to applicable parameters, and determine/allocate PA shares of MWWD's capital and O&M costs.
- Prepare and execute a written plan for sampling flow and strength, and work with the PA's to gain approval and execute the sampling plan.
- Prepare and execute a written plan for educating other City departments, the City Council and the PA's about these necessary cost allocation changes to the Sewage Disposal Agreements.

EA 00167

- Coordinate the cost allocation methodology and the data collection effort with the current sampling effort already being performed.

- Prepare and submit the documentation to the SWRCB Division of Water Quality in accordance with the applicable State of California and Federal requirements.

KICKOFF MEETING

Chuck Mueller and Hedy Griffiths will be leading this team effort. They will set up a kickoff meeting on January 5 or 6, 1995. Please notify Hedy (ext. 35420) which experienced supervisor/staff from your division you are assigning to the team (name/phone number) no later than Wednesday, December 21, 1994, so that a mutually feasible kickoff meeting date/time/location can be determined and announced to all participants.

Please call Susan Hamilton, Chuck Mueller or me should you have any questions about this important effort.

F. D. SCHLESINGER

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Attachment: Exhibit 1

Distribution:
Al Beingessner
Alan Langworthy, MS 45A
Chuck Mueller
Charles Yackly, MS 85

126124

EXHIBIT 1

STRENGTH-BASED BILLING DEVELOPMENT/IMPLEMENTATION TEAM

DIVISION	TEAM ROLE	FUNCTION
SSD	Project Leader	Project Management
SSD	Team Leader	Amend Sewage Disposal Agreements
SSD	Team Leader	Work closely with PA's on approval of the Sampling/Data Collection Plan
SSD	Team Leader	Develop computer model for allocating costs of regional system
EWRD	Team Leader	Prepare technical justification for cost allocations
IWS	Team Leader	Collect samples at PA meter sites
LAB	Team Leader	Analyze samples/data from PA meter sites
SSD	Team Leader	Prepare and submit quarterly billings to PA's

EA 00169

EXHIBIT 2

REVISED 2-8-95 January 31, 1995

Mr. Ronald R. Blair, Revenue Program Specialist
State Water Resources Control Board
Division of Clean Water Programs
2014 T Street, Suite 130
P. O. Box 944212
Sacramento, CA 94244-2120

Dear Mr. Blair:

REVENUE PROGRAM REVIEW - CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

The purpose of this letter report is to:

1. provide an initial response to the wastewater user charge system elements of your letter dated September 30, 1994 regarding our Clean Water Grant Project No. C-06-1092; and

2. present a long-range program which the City will develop and execute over the next several months to make the necessary changes to our wastewater charge system to bring it into compliance with grant requirements as outlined in your letter.

OVERVIEW OF STRENGTH-BASED BILLING FOR PARTICIPATING AGENCIES

The basic premises of this submittal in response to your September 30, 1995 letter are that:

1. the data and the draft program submitted in this letter will serve as the initial foundation of a new strength-based billing system to be implemented in Fiscal Year 1996 by the City of San Diego and the Participating Agencies (PA's); and

2. the City and the PA's will review the data and the draft program included in this letter over the next three to four months, will incorporate direction and guidance provided to us by your office as a result of your review of this initial submittal, and will execute a revised draft program in order to modify our existing PA billing process and procedures to implement a formal strength-based billing process and procedures for the fiscal year commencing July 1, 1995 (FY96).

STRENGTH-BASED BILLING PROGRAM SUMMARY

The following key elements comprise the City's basic program for converting its existing flow-based billing system for the PA's to a flow- and strength-based billing system as called for in Appendix B, "Guidelines for Administering 'Fair and Equitable' Clause Contained in Clean Water Grant Contracts", of the State Water Resource Control Board's (SWRCB) Revenue Program Guidelines for Wastewater Agencies dated April 1983:

1. draft PA wastewater strength sampling, lab testing and data analysis plan;
2. draft technical justifications for cost allocations for FY 94 CIP;
3. draft FY 94 systemwide totals for flow-Q, suspended solids-SS biochemical oxygen demand-BOD;
4. draft unit rates for Q, SS, and BOD for FY 94;
5. draft cost allocation computer model development plan;
6. draft schedule for amendment of Sewage Disposal Agreements; and
7. draft billing plan for issuance of FY 96 billings.

Items 3 and 4 also provide specific responses to your requests for FY 94 data for our system.

The following paragraphs provide a brief overview of each of these strength-based billing program elements.

Draft Sampling, Lab Testing and Data Analysis Plan

In order to implement a strength-based billing program for the PA's, the City is in the process of developing a draft sampling, lab testing and data analysis plan, which includes these major elements:

1. Review of the existing flow (Q) metering sites for the PA's (Exhibit 1 - map identifying locations of existing metering sites) to determine their appropriateness for incorporating strength-based sampling equipment. Exhibit 2 identifies the specific location, agency being metered, and type of meter installed at each existing location.
2. Analysis of proposed additional Q/SS/COD metering and sampling sites (Exhibit 3) to provide more accuracy for both the City and the PA's in determining PA influent wastewater characteristics.

3. Development of a proposed City and PA plan/schedule to perform preliminary sampling to establish baseline strengths for each PA.

4. Review of use of 1988 Industrial Waste Section (IWS) PA sampling program results for initial FY 96 billings until sufficient FY 95 and 96 data is collected and analyzed.

5. Current/proposed City budget actions (FY 95/FY 96) to provide the personnel and equipment resources to implement the plan.

The City intends to build upon its ongoing Q metering system and procedures to incorporate sampling of PA influent wastewater to determine each agency's SS and COD contributions to the regional system. Exhibits 1 through 3 provide specific information on both the City's existing metering sites as well as those sites being considered by the City and the PA's as additional locations for metering and sampling PA wastewater.

The City is proposing the following sampling program for consideration by the State and the PA's for sampling PA wastewater contributions to the regional system:

1. Frequency of sampling:	3 samples per year at up to 56 sites = 168 samples annually
2. Metering/sampling sites:	31 agency sites 25 City sites
3. Sample type:	24-hour flow-proportioned composite sample
4. Equipment (initial):	AutoSampler with flow-proportioned input (minimum of 6 additional samplers required at a cost of @ $50,000)
5. Tests performed:	1 Total Suspended Solids (TSS) test per 24-hour, flow-proportioned composite sample 1 Chemical Oxygen Demand (COD) test per 24-hour, flow-proportioned composite sample

The City is prepared to initiate a limited sampling program this spring to update the data captured during a one-time, systemwide PA sampling program performed by the City's Industrial Waste Section in 1988. The results of this limited sampling effort will be used to develop preliminary billings for the PA's for FY 96.

The City's FY 96 budget includes funds to upgrade its existing ADS flowmeters to include new instrumentation which will allow parallel flow and strength testing at the existing sites (as well as the additional sites highlighted in Exhibit 2). Once this budget request is approved, the equipment is installed, and additional data is captured and analyzed, the City will begin to build a comprehensive database of the flow and strength contributions from not only the PA's

respective service areas, but also several key locations and drainage areas within the City of San Diego's service area to augment the 30 years of flow data which has already been collected on PA and City flows throughout the regional system.

The City will also continue to work with the International Boundary and Water Commission (IBWC) to meter flows originating in Mexico which are captured and transported through the IBWC's emergency connection into the San Diego regional system. A sampling program is already being conducted by the City in conjunction with IBWC and Mexican authorities to identify not only the conventional pollutants (SS/BOD) in the Mexican influent, but also those priority pollutants flowing into the system as a result of industrial and commercial activities south of the border. These data will also be incorporated into the overall analysis of wastewater strength systemwide to ensure that all contributors' respective shares of pollutant contributions to the system are accurately identified so that costs can be fairly and equitably apportioned to all users of the regional system as called for in the Revenue Program Guidelines.

Preliminary Cost Allocations for FY 94 CIP Projects and O&M Costs

In response to specific guidance you gave to us via telephone this month regarding allocation of capital costs and O&M for fiscal year 1994 (FY 94), City staff and engineering consultants conducted an analysis of the projects constituting the MWWD's FY 94 capital improvement program (CIP) and O&M activities. The approach and results of this preliminary analysis are presented in this submittal, and include:

1. a description of preliminary technical review of MWWD's FY 94 CIP projects; and

2. spreadsheet identifying allocations to Q/SS/BOD for all of the FY 94 MWWD CIP projects and O&M activities (Exhibits 4-1 through 4-4).

Preliminary Technical Review of the MWWD FY 94 CIP. The engineering team established to develop preliminary cost allocations for the MWWD FY 94 CIP reviewed the cost allocation methodology employed by other agencies in allocating its costs. This approach incorporates a cost allocation methodology which segregates existing facilities/projects under design or construction into two categories:

1. facilities/projects which were specifically designed and operated to transport and/or treat wastewater (i. e., interceptors, headworks, primary sedimentation tanks, trickling filters, etc.); these can be termed 'direct cost' projects; and

2. facilities/projects which are integral elements of a regional system essential to system operation, yet are not specifically designed and/or operated to transport or process wastewater (plant control center, maintenance and administrative buildings, warehouses, plant water systems, etc.); these can be termed 'distributed cost' projects.

This methodology allocates system expenditures to individual facilities and projects based upon design criteria, unit loadings, removal efficiencies and other factors of cost associated with management, planning, design, construction, operations, maintenance and disposal/reuse of the regional wastewater system. The costs of facilities which benefit the system as a whole (the "distributed cost" category above) are allocated based upon an average of the costs of the allocations of all the 'direct cost' facilities/projects which are specifically designed and operated to transport or treat wastewater.

The engineering team preparing the FY 94 MWWD cost allocations adapted this approach to incorporate the specific features of the San Diego regional wastewater system. The allocations were based upon a system flow and wasteload model used to estimate the relative quantities of flow, SS and BOD received and processed by individual CIP project. This model has been used in preparing flow allocations for the City's ongoing rate program and flow and wasteload projection effort. Inputs to the model were based upon City monitoring reports.

As an illustration of the approach, our regional interceptors, pump stations and related conveyance facilities are designed and sized to accommodate peak flow rates, and therefore 100% of the cost of these types of facilities is allocated to flow. Primary sedimentation basins, on the other hand, remove both SS and BOD, yet the design size of the basins is determined by the volume of flow which they are expected to process. Thus the costs associated with primary sedimentation basins are apportioned among all three parameters. In the case of our anaerobic digesters, the capital, operations and maintenance costs are dependent upon the volume of primary and waste activated sludges received by the digesters. The volume of sludges delivered to the digesters for treatment result from the removal of SS and BOD from the wastewater, and thus wastewater flow is not a consideration in digester sizing or costs; costs related to digesters facilities are therefore proportioned between SS and BOD.

Preliminary FY 94 MWWD CIP Cost Allocations. Exhibit 4-1 through 4-4 present the results of our preliminary technical analysis and allocation of MWWD's FY 94 CIP and O&M costs among the three parameters. As outlined in the previous section, individual unit process projects are categorized as 'direct cost' projects, and their specific costs are allocated based upon design loadings, removal efficiencies, etc., whereas the costs for the projects which benefit the Pt. Loma plant as a whole (i. e., the maintenance and administrative building expansion) are viewed as 'distributed cost' projects, and are allocated on a plant-wide average allocation basis.

FY 96 Allocations

We are also developing a draft plan for conducting a more detailed review of the City's FY 96 CIP and O&M budget to develop cost allocation criteria for FY 95 and the FY 96 strength-based billing. The key elements of the draft plan include the items outlined below:

1. Development of a detailed schedule for analysis and allocation of the FY 95 and 96 capital and O&M costs of all MWWD regional facilities, including all conveyance facilities (interceptors and pump stations), wastewater/water reclamation and biosolids

treatment facilities (all unit processes), and disposal/reuse facilities (outfall, water repurification facilities, biosolids reuse facilities, etc).

2. Review of available CIP and O&M cost allocation reports from similar large wastewater agencies around the state, and discussions with key engineering and O&M staff, including:

    a) City of Los Angeles
    b) County Sanitation Districts of Los Angeles County (CSDLAC)
    c) East Bay Municipal Utility District (EBMUD); and
    d) County Sanitation Districts of Orange County (CSDOC).

3. Detailed analysis of project design criteria, wastewater loadings, removal efficiencies and the associated FY 95 and 96 CIP and O&M existing facilities (Pt. Loma) and new facilities under design or construction (i. e., North City Water Reclamation Plant, Fiesta Island Replacement Project/Northern Sludge Processing Facility, etc.).

4. Detailed review of MWWD CIP project implementation schedules to determine startup dates for the major new facilities and to establish the impacts of new projects on the initial cost allocation percentages developed for FY 94 CIP projects.

5. Presentation and review of both the cost allocation methodology and its application to the MWWD FY 95 and 96 CIP and O&M budgets with the PA's.

6. Further review and refinement of the methodology and specific allocations based upon SWRCB direction and guidance.

7. Incorporation of the FY 95 and 96 cost allocations into the FY 96 strength-based billing program.

Systemwide Q/SS/BOD Totals

This submission identifies flow, SS and BOD data on a systemwide basis for the past five years, presents a brief description of the sources of data used in establishing FY 94 data, and outlines an approach for establishing actual flow and wasteload data and for making future projections of flow and loading for:

1. the regional system as a whole; and

2. each of the individual PA's.

Records of influent flow and wasteload conditions at the Pt. Loma Wastewater Treatment Plant (PLWTP), which presently treats the wastewater originating in the San Diego regional system

(called the Metropolitan System, or the Metro System), have been maintained by the City of San Diego since the system began operations in 1963. The City's wastewater flow and quality monitoring program is comprehensive, and is designed to provide information necessary to support several critical utility functions, including wastewater treatment operations, the regional industrial pretreatment program, regulatory compliance activities, and PA billings. Key sources of compiled wastewater flow and quality information include the following:

1. PLWTP Monthly Monitoring Report;
2. Pt. Loma Ocean Outfall Annual Monitoring Report;
3. systemwide, subbasin and PA flows;
4. PLWTP influent and unit process flow and strength; and
5. special investigations.

A summary of the past five years of systemwide flow and wasteloadings is presented in Table 1 below. As indicated in the footnote to the table, these flows include the contribution from the IBWC emergency connection, but exclude return flows to the PLWTP from the Fiesta Island Sludge Dewatering Facility. The City does not expect to continue to receive flow from the IBWC emergency connection once the IBWC's international treatment plant is placed into operation (expected in calendar year 1996).

TABLE 1
SYSTEMWIDE FLOW AND WASTELOAD GENERATION[b]

FY	Flow[a] (mgd)	TSS (lbs/day)	BOD_5 (lbs/day)
1990	190	463,000	448,000
1991	178	438,000	450,000
1992	175	420,000	397,000
1993	188	419,000	397,000
1994	175	389,000	399,000

[a] Includes Tijuana Emergency Connection flows, excludes return flow from Fiesta Island Sludge Dewatering Facility.
[b] Average annual daily conditions.

Future wastewater flow and wasteload projections for the regional system are currently being prepared. In general, these projections will be based upon disaggregated population forecasts for sewered areas across the regional system service area, and will reflect unit generation rates for flow, TSS and BOD. The projections involve interpolation of the San Diego Association of Governments' (SANDAG's) short-term growth rates forecasted over the next decade (1996-2006), and arithmetic extrapolation of its Interim Plan Forecast to the year 2016. The average annual regional system flow and load projections will then be determined by multiplying sewered population data for individual agencies and the regional service area as a whole by appropriate unit generation rates.

The City has prepared projected flow allocations for the City and the PA's through FY 2004 as a result of the projections developed using the approach highlighted above. Thus a basis already exists to extend these projections out to the year 2016. Similarly, systemwide wasteloads can be estimated in the same manner, although the City currently has little information which would allow projection of wasteloads from either individual PA's or the City itself. The results of the expanded sampling, lab testing and data analysis program presented and explained earlier in this letter are needed to accomplish wasteload projections for the individual PA service areas.

Draft Unit Rates for Q/SS/COD for FY 94

Table 2 presents draft unit rates which allocate FY 94 CIP and O&M costs to each individual wastewater parameter. These draft unit rates can be used as a baseline by the City and the PA's for review and comparison of proposed draft unit rates for Q, SS and BOD for FY 95, 96 and future years. The unit rates are expected to change toward higher rates for SS and BOD since the new facilities under design and construction by MWWD are advanced treatment facilities designed primarily to achieve higher removals of SS and BOD from the influent wastewater.

TABLE 2.
UNIT COST DETERMINATION FOR FISCAL YEAR 1994

TREATMENT PARAMETER	REVENUE REQUIREMENTS, $[a]	UNITS	COST PER UNIT
TOTAL WASTEWATER FLOW	$34,817,573	64,167.0[b]	$542.61[d]
TOTAL SUSPENDED SOLIDS (TSS)	$49,773,044	148,622.2[c]	$334.90[c]
TOTAL BIOCHEMICAL OXYGEN DEMAND (BOD)	$13,228,385	147,702.0[c]	$89.56[c]
TOTAL	$97,819,002		

(a) Includes Operations & Maintenance, Repair, Replacement, & Betterment Costs
(b) Million gallons per year
(c) Thousands of pounds per year
(d) Per million gallons
(e) Per thousand pounds

Draft Cost Allocation Computer Model Development Plan

In order to satisfy the PA's that their respective billings are properly calculated, the City currently employs a flow-based computer cost allocation and billing model which:

1. defines MWWD's budgeted and projected CIP, capital financing and O&M costs for the next ten years;
2. identifies each PA's flows; and
3. breaks out each agency's annual costs for its respective share of capacity rights and anticipated flow-based use of the regional system.

Expansion of the current flow-based cost allocation and billing system to incorporate each PA's wasteload characteristics will require development of another, more comprehensive model. The City of San Diego will thus develop (or acquire) a computer model which allocates the annual costs of the regional system to the PA's based on wastewater flow and strength. The new model will be developed to allow the City to provide the PA's with estimated accurate budgeting and billing information on a timely basis. The cost allocation model will enable the PA's to incorporate projected costs into their respective budgeting and ratesetting processes. A key feature of the model will be its compatibility with the Sewer Revenue Fund Financial/Rate Model.

In determining the configuration of the model, it will be necessary to initially determine the input and output requirements of a cost allocation model. Using the requirements as defined in the SWRCB's "Revenue and Program Guidelines for Wastewater Agencies", a review will be made of existing allocation models that are in use within and outside the City for possible application. The review will include identification of strengths and weaknesses of each appropriate cost allocation model.

Based on input and output requirements and the review of existing allocation models, the City will make a determination on development of a model. Options that will be considered include acquiring an existing model and revising it as necessary to meet the City's unique needs or developing the City's own model.

The schedule for implementation of an appropriate cost allocation model includes the following proposed milestones and projected completion dates:

TABLE 3.
IMPLEMENTATION SCHEDULE

Milestone	Projected Completion Date
1. Define/identify input and output requirements.	March 3, 1995
2. Review Existing Cost Allocation Models and Identify Strengths and Weaknesses.	March 24, 1995
3. Determine if City should acquire existing cost allocation model or develop its own.	March 31, 1995
4. Acquire an existing model and revise as necessary or develop a City model.	April 21, 1995
5. Provide test data for review by other team members.	April 28, 1995
6. Review the sample output with MWWD management, the City Executive Committee, the PA's (and the SWRCB if the SWRCB desires to review the model) and revise as directed.	May 4, 1995
7. Finalize computer modelling and provide documentation for operation of the computer model by City staff, the PA's and other consultants (if so directed by the City).	May 26, 1995

This tentative schedule for development of the computer model to allocate CIP and O&M costs to the PA's will be correlated with the other major strength-based program development efforts to produce a proposed program and schedule for SWRCB review before commencement of strength-based billings to the PA's in FY 96. The City routinely issues the first quarter billings for each fiscal year in September.

Draft Schedule for Amendment of Sewage Disposal Agreements

Section 7 of the City's existing Sewage Disposal Agreements (SDA's) with the PA's calls for the City to "...maintain, manage and control the Metropolitan Sewerage System in an efficient and economical manner...(and) convey, treat...and dispose of all sewage received into the ... System under the terms of this contract in such manner as to comply with all applicable laws, rules and regulations." This section of the existing SDA's provides the City with the ability to develop a strength-based billing system to comply with the Clean Water Act and its implementing regulations (the SWRCB's Revenue Program Guidelines). However, the City and the PA's may wish to amend the SDA's to specifically modify the flow-based billing procedures

in these agreements to spell out the specific terms, conditions and procedures for the proposed new billing method.

The City is currently in the process of:

1. Reviewing and revising the applicable section(s) of the SDA's with the PA's to verify for the SWRCB that the City has the necessary authority in its agreements to commence strength-based billings for the PA's in FY 96.

2. Preparing a detailed workplan/schedule for developing and receiving City Council and PA approval for desired/required modifications to the SDA's to reinforce the City's role in implementing strength-based billings and achieving compliance with the 'fair and equitable' guidelines in the Clean Water Act as presented in Appendix B of the SWRCB's Financial Plan and Revenue Program Guidelines dated April 1983.

The detailed/modified new language in the SDA's which will enable the City to implement strength-based billing is expected to include:

1. the basis for the billings (SWRCB Financial Plan and Revenue Program Guidelines);
2. the procedures for implementing the proposed metering/sampling program and the new cost allocation and billing methodologies; and
3. an annual adjustment/reconciliation process for revising the estimated bills paid by the PA's during the year to reflect the actual flows and wasteload characteristics captured by the new metering, sampling and data analysis program.

Following MWWD staff and City Attorney drafting and internal review of the proposed new language, the City will:

1. Present the proposed new language to implement strength-based billing to the PA's at a PA Technical Advisory Committee (TAC)/City Attorney meeting, and also forward the proposed language to the SWRCB for review.
2. Prepare a proposed schedule for review and approval of the negotiated SDA amendment by the San Diego City Council and the PA's governing boards.

The target date for approval and forwarding of the approved SDA amendment to the SWRCB is July, 1995.

Draft Billing Plan for Issuance of FY 96 Billings

The City recognizes that implementation of a more complicated billing process which incorporates PA wasteload characteristics will require several meetings with the PA's to discuss the proposed new billing procedures, formats, etc., the proposed metering/sampling program, the cost allocation methodology and the amendment to the SDA's, etc. Meetings are being scheduled with the PA TAC commencing in February to present the various elements of the

billing procedures and formats as well as the methodology employed to allocate the costs to wasteload parameters and among the various PA's and the City.

The billings will be developed based on the information available at the time of billing: budget projections for fiscal year 1996, flow and samples data obtained to date, the cost allocation method by loading parameters (flow, BOD and suspended solids) for capital cost, operations and maintenance cost. The revised format will be based on/consistent with current City of San Diego billing format modified to display the strength-based allocation to all PA's in accordance with the "fair and equitable" guidelines in the Clean Water Act. Other districts' procedures and formats will be reviewed to identify possible billing format improvements.

The following schedule identifies the tasks and target dates for commencing strength-based billings in FY 96 (and complies with the PA billing terms and conditions in Section 11 of the existing SDA's):

02/28/95 Meet with the PA TAC to present optional billing formats to include strength-based allocation of costs, unit costs for each parameter, etc.

03/31/95 Prepare an initial draft estimated strength-based billing for each PA to include costs for the proposed FY96 budget, sample data and allocation methods available to date.

04/27/95 Mail to each PA their respective shares of the proposed FY 96 budget based upon allocation of the proposed budget of estimated costs for FY96 to flow and strength.

08/01/95 Mail the PA first quarter strength-based billings for FY96.

11/01/95 Mail the PA second quarter strength-based billings for FY96 and adjusted FY95 flow-based billings.

01/30/96 Mail PA third quarter strength-based billings for FY96.

05/01/96 Mail PA fourth quarter strength-based billings for FY96.

FUTURE REPORTS

In order to keep you abreast of our progress in implementing strength-based billing of our PA's for FY 96, we will provide you with bimonthly status reports documenting both our internal activities and our activities with the PA's in reviewing and achieving consensus on the various elements of the proposed program. We also expect to produce a more detailed report this summer which will present our final program, and will include the specific policies, procedures, metering/sampling schedules and locations, computer model, SDA amendment and FY 96 budget and billing format for implementing strength-based billing.

Please contact either Hedy Griffiths or Charles E. Mueller, Jr. of my staff should you have any detailed questions regarding either the material submitted in this letter or our progress over the next several months in implementing strength-based billing. Hedy can be reached at (619) 533-5420, and Chuck can be reached at (619) 533-5360.

Sincerely yours,

F. D. Schlesinger
Director, MWWD

EXHIBIT 3

STRENGTH-BASED BILLING
MEETING MINUTES

MEETING DATE: March 8, 1995 NOTES BY: Bill Butler

TIME: 1:30 PM

LOCATION: MWWD Offices, C/R 5B, 600 B Street, San Diego

SUBJECT: Fifth Meeting - Strength-based Billing Working Group

ATTENDEES: Hedy Griffiths, Chair, MWWD SSD
Bill Butler, MWWD SSD
Janet Buttman, MWWD O&M Divn.
Chuck Crandall, MWWD SSD
Joe Harris, WUD RAP
Robert Martinez, MWWD SSD
Pat Nuñez, WUD RAP

1. Review of Meeting Agenda/Purpose. Hedy Griffiths presented a brief overview of the key issues and agenda items to be reviewed at the meeting.

2. Review of Status of Short-term report to SWRCB. Hedy Griffiths reported that she had contacted Ron Blair of the SWRCB staff and had discussed a delay in submission of the short-term report with him. Mr. Blair accepted her proposal for a delay until later in March when she explained that the City Auditor was still reviewing the FY 94 year-end cost figures. She promised him that the short-term report would be completed and sent to him as soon as the Auditor completed the review and approved the year-end costs for general release.

3. Review of Wastewater Strength Sampling Program for Participating Agencies (PA's). Janet Buttman reported that she was working with Rod Rippel (Rod was not able to attend the meeting) to prepare a sampling program plan for review with the PA's. Until the SWRCB has reviewed the draft sampling program in the short-term report, it is preferred to hold off on presenting and discussing the draft program with the PA's. Janet and Rod are continuing to develop a draft presentation for the PA's, and expect to present a preliminary presentation to the working group at the next meeting.

4. Review of Mid-term Report Deliverables.

   A. **Wastewater strength sampling, lab testing and data analysis plan.** As indicated under Item 3, Janet reported that she and her staff were continuing to work with Rod Rippel and the MWWD EMTS Division lab staff to develop a draft program.

7. Other Issues. As discussed at the last meeting, all contacts with the PA's regarding the proposed sampling program, including metering and sampling sites and procedures, lab and data analysis procedures, billing policies/procedures, etc., will occur after the City submits the short-term report to the SWRCB for review and conceptual approval.

8. Adjournment. The meeting was adjourned at 2:30.

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EXHIBIT 4

City of San Diego
METROPOLITAN WASTEWATER DEPARTMENT
MEMORANDUM

DATE: March 24, 1995

TO: William W. Kennedy, Pete Wong, Hedy Griffiths

FROM: Sudhir C. Mohleji

SUBJECT: Flow/Suspended Solids/BOD Allocation Factors for 1994 Capital and O & M Costs

---

Attached please find a copy of the back-up for selecting Flow/Suspended Solids/BOD allocation factors for 1994 Capital and Operation and Maintenance (O&M) costs. Three methods used to calculate the allocation factors are 1) The Design Approach, 2) The Function Approach, and 3) The Functional-Design Approach. This information includes a brief description of the general philosophy and the logic used in the development of cost allocation factors for each CIP (Capital Improvement Project) item as listed in the Exhibits 4-1B & 4-1C, and each O & M cost item as listed in the Exhibit 4-1A. A copy of these Exhibits for each method is also attached for reference. Please discard the previous versions that I gave you earlier. This attachment includes some revisions to the CIP allocation factors calculated earlier and superseeds the previous versions.

Please critically review the attached information and provide your comments. I shall be happy to make the necessary revisions.

Smohleji
SUDHIR C. MOHLEJI

Attachments: 1. Back-up for the Selection of Flow/SS/BOD Allocation factors for the 1994 Capital and O & M Costs.
2. Exhibits 4-1A, 4-1B, and 4-1C.

cc: Bill Butler
Robert Martinez
Victor Occiano
Paul Findley
Amer Barhoumi

SEEN REVISED

EA 00067

BACK-UP FOR THE SELECTION OF FLOW \ SS \ BOD ALLOCATION FACTORS FOR 1994 CIP AND OPERATION AND MAINTENANCE COSTS

EA 00068

GENERAL

Three factors namely Flow, Suspended Solids (SS), and Biochemical Oxygen Demand (BOD) have been selected as a basis for dividing the capital improvement program (CIP) costs and the operation and maintenance (O&M) costs. The item a) in the September 30, 1994 letter from the State Water Resources Control Board (Ronald R. Blair to Jack McGrory, City Manager) requires that the City of San Diego must modify its agreements with all participating agencies to include charges for BOD and SS content as well as flow discharged into City facilities. To address this item, factors for allocating cost of all FY 1994 CIPs among the three parameters flow, SS and BOD, were developed. These allocation factors for the CIP items are listed in the attached Exhibits 4-1B and 4-1C, and for O&M in Exhibit 4-1A and should be considered preliminary. According to our workplan final allocation factors will be developed over the next few months.

The allocation methods used by other municipalities have not been publicly presented in detail and the cost allocation philosophy literature seems to be limited to mostly unpublished information. Generally, the methods used to develop allocation factors include; a) design, b) function, and c) functional design. In the design approach, cost allocation is based on design criteria, e.g., because 'flow' is used as a basis to design a primary clarifier, all cost of a primary clarifier is allocated to flow. In the function approach, cost is allocated on basis of the function, e.g., the primary function of a primary clarifier being solids removal, all cost is allocated to SS.

Some government publications tend to rely on a form of 'functional design' cost allocation rationale, but do not provide any specific criteria for calculating cost allocation by unit process. The 'functional design' cost allocation philosophy recognizes both the design criteria and the primary function of a unit process, e.g., a primary clarifier cost is allocated between flow (design criteria), and SS (removal) which is the main function of a primary clarifier.

The cost allocation presented here is primarily based on the functional design approach, but consideration is also given to secondary function of a unit process. For example, the primary function of a primary clarifier is to remove SS, but incidently the associated particulate BOD is also removed along with the SS. In our approach, cost is also allocated to BOD in proportion to the removal of this parameter. Engineering judgement and logic have been followed as much as possible to minimize arbitrary cost allocations. The reasons for selection of cost allocation factors for the specific CIP and O&M items listed in Exhibits 4-1A, 4-1B, and 4-1C are presented in the following sections.

CAUTION: These allocation factors may not be applicable to items of future years. Descriptions of each future item should be carefully reviewed to develop appropriate and consistent allocation factors.

EA 00069

EXHIBIT 5

City of San Diego

METROPOLITAN WASTEWATER DEPARTMENT
MEMORANDUM

533-4200

In reply, please refer to Chronological Number:
CWP- 130821

DATE: April 5, 1995

TO: Alan Langworthy, Deputy Director, Environmental Montoring and Technical Services

VIA: Charles E. Mueller, Jr., Deputy Director, Support Services CEM

FROM: Hedy Griffiths, Supervising Administrative Analyst

SUBJECT: Selection of COD vs. BOD as Basis for Strength-based Billing of PA's

---

INTRODUCTION

Last fall the SWRCB directed the City to develop and implement a new method of billing its Participating Agencies (PA's) based upon wastewater strength as well as flow. MWWD Director Schlesinger's memorandum dated December 14, 1994 established a working group to develop and implement policies and procedures to enable the City to commence strength-based billings for the PA's in FY 96. Representatives assigned and participating in the strength-based billing (SBB) working group from your division include Rod Rippel, Armando Villarino and Walter Konopca.

The SBB working group has developed, and we are prepared to forward an interim report to the SWRCB in the near future which outlines a proposed program for converting the City's current flow-based billings to flow and strength-based billings. A major element of the proposed program is a draft PA wastewater sampling, laboratory analysis and data collection plan which has been developed by the SBB working group. The purposes of this memo are to:

- highlight a key feature of the plan regarding the basis for strength-based sampling, and
- request a decision from you regarding the use of either COD or BOD as the basis for billing the PA's.

OPTIONAL METHODS

As you are fully aware, the two primary bases for determining the oxygen demand which pollutants create in wastewater are chemical oxygen demand (COD) and biochemical oxygen demand (BOD). Based on our review, it appears that agencies statewide are split regarding their use of these measures for establishing pollutant levels in their influents. For instance, the County Sanitation Districts of Los Angeles County (CSDLAC) use COD, whereas the County Sanitation Districts of Orange County (CSDOC) use BOD. Both agencies have existing strength-based billing systems for both their PA's and their industrial dischargers which have been approved by the SWRCB and have been in operation for several years.

130821

ANALYSIS AND RECOMMENDATION

The SBB working group has reviewed these two methods for determining influent wastewater strength on the basis of cost of sampler installation, cost of sampling and testing the samples in the lab, and relative ease of analysis of the data. The primary advantages of COD over BOD as a basis for establishing the strength contributions of the PAs' influent wastewater include:

- Refrigeration is not required for COD samples as is the case for BOD samples; this may eliminate the need for installation of 110-volt electrical lines to be run to each existing and proposed new sampling site around the regional system, and may not require us to purchase refrigerated samplers

- Lab tests to determine COD levels are much faster, simpler and cheaper to run than are BOD tests, which require 5 days to complete.

The SBB working group thus recommends use of COD over BOD as the basis for determining pollutant levels in the PAs' influent wastewater.

REQUEST FOR RESPONSE

The Support Services Division (SSD) awaits a decision from the Environmental Monitoring and Technical Services Division (EMTSD) before releasing the interim report developed by the SBB working group to the SWRCB for its review and approval. The SBB working group expects to continue to develop its overall program for strength-based billing for FY 96 over the next 4 to 6 months, and will continue to work with your staff members assigned to the group in developing a program which is consistent with your division's ongoing efforts to provide routine data to the Regional Board, the State Board and EPA.

This interim report is a first-cut submission to the SWRCB, any or all elements of which can be modified by the City based upon review comments/ additional analysis by City staff, comments from SWRCB reviewers, and/or discussions with the PA's. We feel it appropriate, however, to be certain that this proposed recommendation is consistent with ongoing EMTSD data analysis and report submissions to the State, and will not issue the report until we receive formal notification from your Division that this recommendation is consistent and acceptable to you.

130821

SSD staff and/or the SBB working group are available to meet with you and your staff at your convenience to review and discuss this issue. Please call me at X35360 or Hedy Griffiths, chair of the SBB working group, to set up a meeting on this issue should you feel one is necessary. Thanks for your continued support!

HG:bb
[a:\CODVSBOD.385]

cc: ~~Armando Villarino~~
Rod Ripple

EXHIBIT 6

City of San Diego
METROPOLITAN WASTEWATER DEPARTMENT
MEMORANDUM

In reply, please refer to Chronological Number: CWP_____

DATE: April 13, 1995

TO: Hedy Griffiths, Supervising Administrative Analyst via Charles E. Mueller, Jr., Deputy Director, Support Services Division

FROM: Alan C. Langworthy, Deputy Metropolitan Wastewater Director

SUBJECT: Selection of COD vs. BOD as Basis for Strength-based Billings of PA's

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This memo is in response to your request for a recommendation regarding the analytical methodology for determining the oxygen demand for wastewater strength-based billing purposes.

I have reviewed your memo and discussed the issue with my technical staff. It is my opinion that the use of the Chemical Oxygen Demand (COD) test for this purpose is appropriate and has several advantages from a practical, as well as technical, aspect. Technically, the many factors that can effect a BOD test are not as onerous to a COD procedure and there can be less variability in the results. From a practical standpoint, COD determinations can be less expensive and much more timely and efficient as your memo correctly points out.

ALAN C. LANGWORTHY

lhh

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EXHIBIT 7

STRENGTH-BASED BILLING
MEETING MINUTES

MEETING DATE: April 26, 1995 NOTES BY: Bill Butler

TIME: 3:00 PM

LOCATION: MWWD Offices, C/R 5B, 600 B Street, San Diego

SUBJECT: Eighth Meeting - Strength-based Billing Working Group

ATTENDEES: Bill Butler, MWWD SSD
Janet Buttman, MWWD O&MD
Chuck Crandall, MWWD SSD
Hedy Griffiths, MWWD SSD
Bill Kennedy, MWWD EWRD
Mary McKinnon, MWWD SSD

1. Review of Meeting Agenda/Purpose. Bill Butler presented a brief overview of the key issues and agenda items to be reviewed at the meeting to the participants in the strength-based billing (SBB) working group.

2. Review of Status of Short-term report to SWRCB. Bill Butler reported that a draft of the short-term report was being circulated for MWWD management review, and indicated that Ron Blair agreed to a delay until early May following internal MWWD/City review and approval of the draft report.

3. Review status of Flow/Strength Projections Report. Bill Kennedy presented the working group with a written status report (copy attached) of the technical team's efforts in producing flow projections and other data relevant to the work of the strength-based billing working group. He also reported that the technical staff's efforts to develop wastewater strength data on an ongoing basis for both advanced facility planning and strength-based billing purposes will be improved significantly when the new wastewater sampling program being developed by the working group is implemented and begins to generate data from throughout the regional system.

4. Review of Wastewater Strength Sampling Program for Participating Agencies (PA's)/Review of Proposed Metering/Sampling Program Startup Plan. Janet Buttman indicated that development of a specific sampling program plan to be presented for review by the PA's was still on hold until we receive a positive response from the SWRCB on the plan proposed in the short-term report.

The response to the memo issued by SSD to EMTSD following the April 12, 1995 SBB working group meeting regarding the use of BOD vs. COD as a basis for testing wastewater strength generated by Alan Langworthy was circulated to the attendees (copy attached). It indicates his

agreement with the SBB working group's recommendation that COD is preferred over BOD as the strength testing method of choice for our sampling program.

4. Review Status of I/I and Return Flow Impact on SBB Program. Bill Butler reported that Robert Martinez was preparing a proposed draft revision of the computerized cost allocation model for review by the working group which would incorporate inflow and infiltration (I/I) and Fiesta Island (and, in the future, FIRP/NSPF) return flows into the model to ensure the costs are shared fairly among all agencies using the regional system. Robert will be prepared to present the proposed revisions to the model in mid-to-late May once more pressing work on biosolids privatization and O&M estimates to be used in the FY 96 sewer rate case are completed. The proposed revisions will be reviewed by the working group and presented to MWWD management for review and approval before they are formally incorporated into the model.

Janet Buttman reported that she was providing Robert with some recent flow metering data on I/I in the City of Poway, and would provide more data as it becomes available to highlight the impacts of individual rain events on peak flows around the system. Bill Kennedy reported that the engineering staff feels that the current peak flow levels in the system are closer to 2.0 than the 1.8 figure which we've been using systemwide for the past several years.

5. Review of Mid-term Report Deliverables.

A. Wastewater strength sampling, lab testing and data analysis plan. As indicated under Item 3, Janet and the Environmental Monitoring and Technical Services Division (EMTSD) staff are continuing to work together to develop a draft sampling program to present to the PA's following SWRCB approval of the short-term report.

B. Technical justifications for cost allocations. Bill Kennedy reported that the engineering team members of the working group are awaiting firm budget projections for FY 96-2000 CIP and O&M costs for MWWD projects and facilities. Once the budgets are firm, the team will develop cost allocation percentages for this 5-year time horizon for cost allocation and rate analysis purposes.

C. Development of FY 95-2000 systemwide/individual PA totals for Q/SS/BOD/COD. Bill Kennedy reported that the engineering team working on the MWWD flow/strength allocation project has wrapped up its work in support of the waiver application. As reported in Item 3 above, Bill Kennedy briefed the working group on the results of this effort. Once the waiver application is forwarded to the SWRCB and EPA, the strength projections available from the waiver application will be reviewed by the engineers assigned to the SBB working group for incorporation into the strength-based sampling and billing program now under development by the group.

D. **Refinement of cost allocation computer model.** As reported under Item 4, Robert Martinez is continuing to work on a revised version of the cost allocation model to enable such factors as inflow/infiltration (I/I) and return flows from Fiesta Island to the Pt. Loma plant to be incorporated into the billing process. Robert will present the resultant revised cost allocations for review internally by the working group at a future meeting, most likely in late May.

E. **Development of draft unit rates for Q/SS/BOD for FY 94.** The draft Q/SS/BOD rates for the selected functional-design allocation methodology for FY 94 have been revised using the cost allocation model and a derived percentage allocation approach for distributed cost projects. The revised draft rates have been incorporated into the latest draft of the short-term report to the SWRCB, and following further review and approval by MWWD management, will be forwarded to the SWRCB for review and comment.

F. **Development of billing plan/procedures for FY 96 billings.** Development of a detailed billing plan and procedures is still on hold until the draft sampling plan, the proposed revised cost allocation methodology and the overall strength-based billing program are reviewed and approved by the SWRCB.

6. Project Inter/intra-department Coordination. No items/issues requiring additional inter-intra-department coordination arose at the meeting.

7. Review/Confirmation of Next Meeting. **The next meeting is scheduled for 3:00 PM Wednesday, May 10, 1995, in conference room 5B, MWWD Offices, 600 B Street.**

8. Other Issues. No other issues were raised by the group.

10. Adjournment. The meeting was adjourned at 4:00 pm.

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5/9/95 - Version # 3

EXHIBIT 8

STRENGTH-BASED BILLING
MEETING MINUTES

MEETING DATE: May 10, 1995 NOTES BY: Bill Butler

TIME: 3:00 PM

LOCATION: MWWD Offices, C/R 5B, 600 B Street, San Diego

SUBJECT: Ninth Meeting - Strength-based Billing Working Group

ATTENDEES: Bill Butler, MWWD SSD
Janet Buttman, MWWD O&MD
Stan Griffith, WUD SD
Hedy Griffiths, MWWD SSD
Joe Harris, RAP
Bill Kennedy, MWWD EWRD
Peggy Merino, MWWD SSD
Sudhir Mohleji, MWWD EWRD
Rod Rippel, MWWD EMTSD
Armando Villarino, MWWD EMTSD

1. Review of Meeting Agenda/Purpose. Hedy Griffiths presented a brief overview of the key issues and agenda items to be reviewed at the meeting to the participants in the strength-based billing (SBB) working group.

2. Review of Status of Short-term report to SWRCB. Hedy Griffiths passed out copies of the short-term report which had been reviewed and approved by MWWD management and the Executive Committee and sent to Ron Blair of the SWRCB on Tuesday, May 9. Hedy thanked the members of the working group for their efforts in preparing the report, and asked the group to review it in detail prior to the next meeting to discuss work requirements for the final report to the SWRCB, which is due later this year.

3. Review of Mid-term Report Deliverables.

A. **Wastewater strength sampling, lab testing and data analysis plan.** Janet Buttman, Rod Rippel and Armando Villarino advised that they are continuing to work together to develop a draft sampling program to present to the PA's following SWRCB approval of the short-term report.

B. **Technical justifications for cost allocations.** Bill Kennedy reported that the engineering team members of the working group are awaiting firm budget projections for FY 96-2000 CIP and O&M costs for MWWD projects and facilities. Joe Harris indicated that he had preliminary data on ten-year projections for systemwide O&M and CIP costs, and would provide the data to the working group, including the technical team once the budget projections are

firm. When the technical team receives the 10-year projections, Bill indicated that the team would be prepared to develop cost allocation percentages for the 10-year time horizon for cost allocation and rate analysis purposes. Sudhir Mohleji suggested that this would probably not be too difficult a project in that many of the MWWD CIP projects are multi-year projects, and the individual project allocations would remain the same as for many of the FY 94 projects (i. e., FIRP/NSPF, NCWRP, etc.).

C. **Development of FY 95-2000 systemwide/individual PA totals for Q/SS/BOD/COD.** Bill Kennedy reported that an internal working draft of the MWWD flow/strength allocation project was available for use by the group.

D. **Refinement of cost allocation computer model.** At the next meeting of the working group, Robert Martinez will present a proposed revised version of the cost allocation computer model to enable such factors as inflow/infiltration (I/I) and return flows from Fiesta Island to the Pt. Loma plant to be incorporated into the billing process.

E. **Development of draft unit rates for Q/SS/BOD for FY 94.** The draft Q/SS/BOD rates for the selected functional-design allocation methodology for FY 94 were incorporated into the short-term report to the SWRCB. This task is complete.

F. **Development of billing plan/procedures for FY 96 billings.** Development of a detailed billing plan and procedures is still on hold until the draft sampling plan, the proposed revised cost allocation methodology and the overall strength-based billing program are reviewed and approved by the SWRCB.

4. Project Inter/intra-department Coordination. No items/issues requiring additional inter-intra-department coordination arose at the meeting.

5. Review/Confirmation of Next Meeting. **The next meeting is scheduled for 3:00 PM Wednesday, May 17, 1995, in conference room 5B, MWWD Offices, 600 B Street.**

6. Other Issues. The working group discussed the assignments proposed on the meeting agenda (copy attached) for the initial meeting with the PA's (expected to occur soon after we receive preliminary approval from the SWRCB of the proposed plan outlined in the short-term report). All participants accepted their respective assignments. Joe Harris also volunteered to present an update/status of the City's sewer rate case to the PA's at the initial meeting.

10. Adjournment. The meeting was adjourned at 4:45 pm.

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5/16/95

EXHIBIT 9

STRENGTH-BASED BILLING
MEETING MINUTES

MEETING DATE: May 31, 1995 NOTES BY: Bill Butler

TIME: 3:00 PM

LOCATION: MWWD Offices, C/R 5B, 600 B Street, San Diego

SUBJECT: Eleventh Meeting - Strength-based Billing Working Group

ATTENDEES: Bill Butler, MWWD SSD
Janet Buttman, MWWD O&MD
Chuck Crandall, MWWD SSD
Hedy Griffiths, MWWD SSD
Bill Kennedy, MWWD EWRD
Cesar Lopez, MWWD EWRD
Robert Martinez, MWWD SSD
Peggy Merino, MWWD SSD
Sudhir Mohleji, MWWD EWRD
Armando Villarino, MWWD EMTSD

1. Review of Meeting Agenda/Purpose. Hedy Griffiths presented a brief overview of the key issues and agenda items to be reviewed at the meeting to the participants in the strength-based billing (SBB) working group.

2. Review of Status of Short-term report to SWRCB. Hedy Griffiths reported that she had discussed the status of the short-term report with Ron Blair of the SWRCB earlier in the day, and Ron indicated that he had received the report, but had not yet reviewed it in detail. Ron asked if the City had discussed the report with the Participating Agencies (PA's) yet, and Hedy advised him that we were waiting for conceptual approval from the SWRCB before sharing the report and initiating discussions with the PA's regarding implementation of the proposed program. Hedy also advised Ron that the City was undertaking a one-time PA sampling program this summer to acquire current strength data for each PA for FY 96 billing purposes. Ron was pleased that the City was undertaking this effort.

3. Update on FY 96 Billing Option Selection/One-Time Sampling Program. Hedy Griffiths indicated that she discussed the paper outlining five options for developing strength-based bills for the Participating Agencies (PA's) for FY 96 (presented to the SBB working group at the May 17th meeting) with Chuck Mueller. Chuck accepted the working group's recommendation of option # 5, which calls for performance of a one-time sampling and lab analysis effort this summer for each of the PAs' service areas to establish current wastewater strength characteristics for the FY 96 billing.

Chuck then discussed the recommendation with Alan Langworthy, who also approved it and directed his staff to develop a plan and schedule to carry out the one-time effort. Armando

Villarino handed out a memo to the group which provided an estimate of the time it would take his staff to take the samples for each PA and complete lab analysis for the samples (the estimate in the handout indicated that @ 6 weeks will be required to complete the sampling and lab analysis at @23 sites systemwide). Armando indicated that he and his staff were planning to initiate the effort within the next two weeks. Janet and Armando advised that they would work together to develop a final list of sampling sites.

4. Review Proposed Revisions to Computer Model. Robert Martinez passed out a handout which presented a proposed revised version of the cost allocation computer model to enable such factors as inflow/infiltration (I/I) and return flows from Fiesta Island to the Pt. Loma plant to be incorporated into the billing process. The working group reviewed the handout and recommended that the proposed revision be recommended to MWWD management for incorporation into the FY 96 PA billings. Hedy Griffiths and Robert will present the proposed revisions to the DD for Support Services for his review and approval.

Bill Kennedy and Janet Buttman noted that they both felt that the flow estimate for systemwide I/I on Robert's spreadsheets was too low and the associated SS and COD were too high. They both suggested that we will be able to establish better data on I/I and related SS/COD once the long-term metering and sampling program proposed for the strength-based billing program starts generating data.

5. Review of PA Meeting Schedule/Discussion Items. The working group then reviewed the elements of the proposed program to be discussed with the PA's, and individual members updated the group on the status of their presentations to the PA's at the initial meeting (which will be held once the SWRCB approves the draft short-term report). Later meetings with the PA's could include all the PA's or just selected members interested in special topics such as ADS meters, sampling sites, etc. The assignments for the initial meeting remained the same as proposed during the last working group, and include:

• Strength-based billing program overview -progress to date, schedule, etc.	Hedy Griffiths
• Flow/strength metering/sampling plan and meter/sampler installation schedule	Janet Buttman\ Rod Rippel
• Cost allocation approach	Sudhir Mohleji
• Computer-based allocation model	Robert Martinez
• FY 96 budget estimate/SBB schedule	Mary McKinnon
• FY 96 City of San Diego sewer rates	Joe Harris
• PA SBB subcommittee proposal	Hedy Griffiths

6. Review of Mid-term Report Deliverables. The group then reviewed progress toward expanding the basic elements of the program outlined in the short-term report into more comprehensive, detailed policies and procedures for incorporation into the mid-term report, the target date for completion of which is @ September 1, 1995.

A. Wastewater strength sampling, lab testing and data analysis plan. Janet Buttman and Armando Villarino advised that they are continuing to work together to develop a draft sampling program to present to the PA's following SWRCB approval of the short-term report.

B. Technical justifications for cost allocations. Bill Kennedy reported that the engineering team members of the working group are awaiting firm budget projections for FY 96-2000 CIP and O&M costs for MWWD projects and facilities from Joe Harris, who was unable to attend the meeting.

C. Development of FY 95-2000 systemwide/individual PA totals for Q/SS/BOD/COD. Bill Kennedy reported that the internal working draft of the MWWD flow/strength allocation project circulated to various members of the group last week was still being reviewed and updated.

D. Refinement of cost allocation computer model. See Item 4 above.

E Development of billing plan/procedures for FY 96 billings. Development of a detailed billing plan and procedures is still on hold until the draft sampling plan, the proposed revised cost allocation methodology and the overall strength-based billing program outlined in the short-term report are reviewed and approved in concept by the SWRCB.

7. Project Inter/Intra-department Coordination. No items/issues requiring additional inter-intra-department coordination arose at the meeting. .

8. Review/Confirmation of Next Meeting. The next meeting is scheduled for 3:00 PM Wednesday, June 14, 1995, in conference room 5B, MWWD Offices, 600 B Street.

9. Other Issues. No other issues required working group discussion.

10. Adjournment. The meeting was adjourned at 4:15 pm.

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6/1/95 - Version # 2

EXHIBIT 10

134337

THE CITY OF
SAN DIEGO
METROPOLITAN WASTEWATER DEPARTMENT
600 B STREET, SUITE 500 • SAN DIEGO, CALIFORNIA 92101 - 4587
PHONE: (619) 533-4200 • FAX: (619) 533-4267

June 12, 1995

Mr. Ronald R. Blair, Revenue Program Specialist
State Water Resources Control Board
Division of Clean Water Programs
2014 T Street, Suite 130
P. O. Box 944212
Sacramento, CA 94244-2120

REVENUE PROGRAM REVIEW UPDATE No. 1
CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

Dear Mr. Blair:

The purpose of this letter is to confirm our conversation on Wednesday, May 31, 1995 concerning the overall plan for implementation of a Strength Based Billing (SBB) method and to provide an update on refinements of the proposal.

As discussed previously, our intent is to receive your input and conceptual approval of our proposal before distribution to and inclusion of the Participating Agencies (PA's) for final planning and implementation of SBB. At the same time, the SBB team continues to work toward the final proposal and implementation of strength based billing to distribute costs among our users on a more fair and equitable basis, as required.

SBB SAMPLING

An SS/COD sampling will take place this month, to update the suspended solids data from FY88 and to include COD data.

EA 64207
PK 02294-9
MWWD-BH0262
SWCRB 0655

DIVERSITY

REVENUE PROGRAM REVIEW UPDATE No. 1
CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

FY96 PROPOSED SAMPLING

The FY96 proposed budget for the City of San Diego includes funds to upgrade meters for collection of strength sampling as well as for lab testing and data analyses.

SBB COST ALLOCATION MODEL

Since the initial submission, MWWD staff has continued to develop and refine the SBB cost allocation model. It was determined that it is necessary to recognize z systemwide costs, both the infiltration and inflow (I/I) and the centrate flows originating at the Fiesta Island biosolids dewatering facility which are returned to the Pt. Loma regional treatment facility. This recognizes the need to distribute costs on a fair and equitable basis as required to all agencies and customers using the Metropolitan Sewage System.

As mentioned, to date all analyses using FY94 actual costs and FY88 sampling have shown a reduction in PA costs; it is assumed the same will hold true for FY96 budgeted amounts based on current sampling with I/I and Fiesta Island returns included.

Attached are a series of spreadsheets of FY 94 allocated costs, which incorporate I/I and Fiesta Island return flow costs as a component of the cost shared with the PA's. These spreadsheets illustrate the allocation approach we plan to implement for the FY 96 Strength Based Billings.

FY96 SB BILLING AND MEETINGS WITH PA'S

The sampling will be complete by mid-August and upon your conceptual approval of our proposal, we will then schedule the meeting to provide the PA's with the revised FY96 billing based on Flow, Suspended Solids and COD. At the initial meeting we will provide an overall presentation of the proposed SBB method, work in progress, solicit PA input, and schedule future meetings between the PA's and the City of San Diego.

134337

Mr. Ronald R. Blair, Revenue Program Specialist
State Water Resources Control Board

June 9, 1995
Page 3 of 3

REVENUE PROGRAM REVIEW UPDATE No. 1
CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

FY96 SB BILLING, FY95 ADJUSTMENT AND FY96 ADJUSTMENT

On May 1, 1995, the PA's were provided FY96 estimated billings based on our proposed budget, which will not receive final approval until June 30, 1995. As in the past, when actual costs for the prior fiscal year (FY95) are determined and agreed to by the Auditor, we then provide the PA's with the actual costs and actual flow for FY95 as an adjustment, along with the revised FY96 budget for their FY96 billings. This normally coincides with the first quarter billing to the PA's.

For FY96, it is our intent to adjust actual FY95 costs based on flow and at the same time, to provide the PA's with the revised FY96 budget dollars based on Flow, Suspended Solids, and COD. With the first quarter adjustment for FY96, actual cost, flow, suspended solids and COD data collected during FY96 will be used for the FY96 strength based billing adjustment.

Please contact me at (619) 533-5420 regarding any comments or questions about the above information or about the contents of our original submittal.

Sincerely yours,

Hedy R. Griffiths
Supervising Administrative Analyst,
Agency Contracts

[BLAIRHRG.695]

cc: F. D. Schlesinger
C. E. Mueller, Jr.
SBB Team
Grants Administrator

PROJECTED METROPOLITAN SYSTEM WASTEWATER CHARACTERISTICS – FISCAL YEAR 1994

AGENCY	WASTEWATER CHARACTERISTICS AVERAGE FLOW – MGD[a]	SS mg/l[b]	COD mg/l[c]	ANNUAL USE UNADJUSTED 1994 FLOWS MG	ANNUAL USE ADJUSTED 1994 FLOWS MG[d]	ANNUAL USE UNADJUSTED SS K LB	ANNUAL USE ADJUSTED SS K LB[d]	ANNUAL USE UNADJUSTED COD K LB	ANNUAL USE ADJUSTED COD K LB[d]
CHULA VISTA/MONTGOMERY	8.58	193	642	3,133.0	3,264.4	5,055.5	5,698.7	16,796.7	18,348.1
CORONADO	2.63	113	549	961.3	1,001.6	904.6	1,019.7	4,403.9	4,810.6
DEL MAR	0.67	152	605	243.8	254.1	309.1	348.4	1,231.0	1,344.7
EL CAJON	7.77	253	648	2,834.7	2,953.6	5,974.1	6,734.1	15,327.9	16,743.6
IMPERIAL BEACH	2.31	115	553	841.7	877.0	805.1	907.5	3,884.0	4,242.7
LA MESA	5.09	182	639	1,858.7	1,936.6	2,818.6	3,177.2	9,910.8	10,826.1
LAKESIDE/ALPINE	2.79	220	608	1,018.4	1,061.1	1,869.1	2,106.9	5,166.9	5,644.2
LEMON GROVE	1.62	211	614	591.8	616.6	1,040.1	1,172.5	3,032.2	3,312.2
NATIONAL CITY	3.16	189	673	1,154.2	1,202.6	1,822.0	2,053.9	6,481.6	7,080.3
OTAY	0.23	273	585	82.7	86.2	188.5	212.5	403.9	441.2
PADRE DAM	3.99	220	755	1,455.6	1,516.7	2,671.5	3,011.4	9,170.6	10,017.6
POWAY	3.21	181	598	1,172.4	1,221.5	1,768.7	1,993.8	5,850.2	6,390.5
SPRING VALLEY	9.50	273	591	3,465.9	3,611.3	7,897.3	8,902.1	17,092.5	18,671.2
WINTER GARDENS	0.81	253	573	296.7	309.1	625.3	704.8	1,418.6	1,549.6
SUBTOTAL PARTICIPATING AGENCIES	52.36	212	606	19,110.9	19,912.6	33,749.6	38,043.5	100,171.0	109,422.8
SAN DIEGO	114.53	281	629	41,803.5	43,557.1	97,853.1	110,302.8	219,414.9	239,680.0
U.S. NAVY	1.80	113	549	656.7	684.2	617.9	696.6	3,008.4	3,286.3
INFILTRATION/INFLOW	6.00								
RETURN FLOWS	1.08								
TOTAL	175.76	278	658	64,153.9	64,153.9	149,042.8	149,042.8	352,389.1	352,389.1

(a) Flow estimates based on actual 1994 flows for each agency – I&I estimated by flow committee – return flows measured.
(b) SS estimates for each agency are based on Feb. 7, 1990 memorandum on Revenue Sampling Data by Rod Ripple.
See Secondary Financial Plan and Revenue Program dated May 1990
(c) COD estimates for each agency are based on FY 1991 population and land use projections for residential, public facilities, and commercial/industrial classifications.
See Secondary Financial Plan and Revenue Program dated May 1990
(d) Adjustment based on each Member Agency receiving proportionate share of the total amount allocated to I&I and return flows

6-30-05 COS SEC Subpoena

MWWD-BH0265

13537

NO ALLOCATION OF I&I AND RETURN FLOW COSTS

PROJECTED DISTRIBUTION OF METROPOLITAN SYSTEM WASTEWATER COSTS – FISCAL YEAR 1994
FUNCTIONAL–DESIGN BASED ALLOCATION METHOD

AGENCY	ALLOCATION OF COSTS BY FLOW, SUSPENDED SOLIDS AND CHEMICAL OXYGEN DEMAND				ALLOCATION BASED ONLY ON FLOW	FLOW AND STRENGTH MINUS FLOW ONLY	
	FLOW (a)	TSS (b)	COD (c)	TOTAL FLOW, TSS & COD		AMOUNT	%
CHULA VISTA/MONTGOMERY	2,363,601	1,086,337	1,022,162	4,472,100	$4,863,423	($391,323)	-8.05%
CORONADO	725,232	194,377	267,999	1,187,607	1,492,261	(304,654)	-20.42%
DEL MAR	183,956	66,418	74,912	325,286	378,514	(53,228)	-14.06%
EL CAJON	2,138,553	1,283,722	932,779	4,355,054	4,400,358	(45,303)	-1.03%
IMPERIAL BEACH	634,991	173,003	236,361	1,044,356	1,306,579	(262,223)	-20.07%
LA MESA	1,402,228	605,668	603,119	2,611,015	2,885,270	(274,255)	-9.51%
LAKESIDE/ALPINE	760,319	401,639	314,433	1,484,391	1,580,919	(96,528)	-6.11%
LEMON GROVE	446,473	223,504	184,521	854,498	918,677	(64,179)	-6.99%
NATIONAL CITY	870,726	391,525	394,439	1,656,690	1,791,634	(134,944)	-7.53%
OTAY	62,423	40,513	24,580	127,516	128,444	(928)	-0.72%
PADRE DAM	1,098,157	574,061	558,078	2,230,296	2,259,603	(29,306)	-1.30%
POWAY	884,461	380,069	356,011	1,620,540	1,819,896	(199,355)	-10.95%
SPRING VALLEY	2,614,747	1,696,989	1,040,161	5,351,897	5,380,190	(28,292)	-0.53%
WINTER GARDENS	223,833	134,362	86,330	444,525	460,566	(16,041)	-3.48%
SUBTOTAL PARTICIPATING AGENCIES	14,417,699	7,252,186	6,095,886	27,765,771	29,666,333	(1,900,562)	-6.41%
SAN DIEGO	33,981,374	23,072,046	14,768,336	71,021,756	69,921,194	1,900,562	2.72%
TOTAL	$48,399,073	$30,324,231	$20,864,222	$99,587,527	$99,587,527	($0)	

(a) Flow estimates based on actual 1994 flows for each agency.
(b) SS estimates for each agency are based on Feb. 7, 1990 memorandum on Revenue Sampling Data by Rod Ripple.
See Secondary Financial Plan and Revenue Program dated May 1990
(c) COD estimates for each agency are based on FY 1991 population and land use projections for residential, public facilities, and commercial/industrial classifications.
See Secondary Financial Plan and Revenue Program dated May 1990

6-30-05 COS SEC Subpoena

MWWD-BH0266

EXHIBIT 337

I&I AND RETURN FLOW COSTS ARE ALLOCATED TO MEMBER AGENCIES

PROJECTED DISTRIBUTION OF METROPOLITAN SYSTEM WASTEWATER COSTS – FISCAL YEAR 1994
FUNCTIONAL–DESIGN BASED ALLOCATION METHOD (a)

AGENCY	ALLOCATION OF COSTS BY FLOW, SUSPENDED SOLIDS AND CHEMICAL OXYGEN DEMAND				ALLOCATION BASED ONLY ON FLOW	FLOW AND STRENGTH MINUS FLOW ONLY	
	FLOW (b)	TSS (c)	COD (d)	TOTAL FLOW, TSS & COD		AMOUNT	%
CHULA VISTA/MONTGOMERY	2,462,748	1,159,457	1,086,351	4,708,556	4,863,423	(154,867)	-3.18%
CORONADO	755,653	207,460	284,828	1,247,942	1,492,261	(244,319)	-16.37%
DEL MAR	191,672	70,888	79,616	342,177	378,514	(36,337)	-9.60%
EL CAJON	2,228,260	1,370,128	991,355	4,589,743	4,400,358	189,385	4.30%
IMPERIAL BEACH	661,627	184,648	251,204	1,097,479	1,306,579	(209,099)	-16.00%
LA MESA	1,461,047	646,435	640,993	2,748,476	2,885,270	(136,794)	-4.74%
LAKESIDE/ALPINE	800,548	426,672	334,179	1,563,400	1,580,919	(17,519)	-1.11%
LEMON GROVE	465,201	238,548	196,109	899,857	918,677	(18,819)	-2.05%
NATIONAL CITY	907,250	417,878	419,209	1,744,337	1,791,634	(47,297)	-2.64%
OTAY	65,042	43,240	26,124	134,405	128,444	5,961	4.64%
PADRE DAM	1,144,221	612,700	593,124	2,350,045	2,259,603	90,442	4.00%
POWAY	921,562	405,651	378,368	1,705,580	1,819,896	(114,316)	-6.28%
SPRING VALLEY	2,724,429	1,811,211	1,105,481	5,641,121	5,380,190	260,931	4.85%
WINTERGARDENS	233,222	143,405	91,751	468,379	460,566	7,813	1.70%
SUBTOTAL PARTICIPATING AGENCIES	15,022,482	7,740,322	6,478,693	29,241,497	29,666,333	(424,836)	-1.43%
SAN DIEGO	33,376,591	22,583,910	14,385,529	70,346,030	69,921,194	424,836	0.61%
TOTAL	48,399,073	30,324,231	20,864,222	99,587,527	99,587,527	0	

(a) Allocates I&I plus return flow costs to all member agencies.
(b) Flow estimates based on actual 1994 flows for each agency.
(c) SS estimates for each agency are based on Feb. 7, 1990 memorandum on Revenue Sampling Data by Rod Ripple. See Secondary Financial Plan and Revenue Program dated May 1990
(d) COD estimates for each agency are based on FY 1991 population and land use projections for residential, public facilities, and commercial/industrial classifications. See Secondary Financial Plan and Revenue Program dated May 1990

6-30-05 COS SEC Subpoena

MWMD-BH0267

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EXHIBIT 11

STRENGTH-BASED BILLING
MEETING MINUTES

MEETING DATE: June 14, 1995 NOTES BY: Bill Butler

TIME: 3:00 PM

LOCATION: MWWD Offices, C/R 5B, 600 B Street, San Diego

SUBJECT: Twelfth Meeting - Strength-based Billing Working Group

ATTENDEES: Amer Barhoumi, MWWD EWRD
Bill Butler, MWWD SSD
Janet Buttman, MWWD O&MD
Chuck Crandall, MWWD SSD
Hedy Griffiths, MWWD SSD
Joe Harris, WUD RAP
Mary McKinnon, MWWD SSD
Peggy Merino, MWWD SSD

1. Review of Meeting Agenda/Purpose. Hedy Griffiths presented a brief overview of the key issues and agenda items to be reviewed at the meeting to the participants in the strength-based billing (SBB) working group.

2. Review of Status of Short-term report to SWRCB. Hedy Griffiths reported that she had forwarded an update to the short-term report to Ron Blair of the SWRCB in a letter dated June 12, 1995. The letter formally advised Mr. Blair of the City's intent to conduct a suspended solids (SS)/chemical oxygen demand (COD) sampling program this summer to update the SS data from FY88 and to start a new data base for PA COD data. The data will be used as the basis for PA strength-based billings in FY 96.

The letter also formally advised the SWRCB of the refinements which the SBB working group recommended be added to the SBB cost allocation model to share the costs of inflow and infiltration (I/I) and the Fiesta Island return flows with the PA's. Incorporation of these refinements into the cost allocation model and the FY 96 strength-based billing was approved by MWWD management late last month.

3. Update on FY 96 Summer Sampling Program. Hedy Griffiths reported that Armando Villarino, who was unable to attend the meeting because he was serving on an interview panel, advised her that his division had commenced performance of a one-time sampling and lab analysis effort this week for each of the PAs' service areas to establish current wastewater strength characteristics for the FY 96 billing. Armando will provide a detailed update regarding the sampling effort at the next meeting.

4. Review Proposed Revisions to Computer Model. As reported under item No. 2 above, the

cost allocation computer model revisions proposed by Robert Martinez, which included such factors as inflow/infiltration (I/I) and return flows from Fiesta Island to the Pt. Loma plant, were included in the letter update to the SWRCB. These revisions will be incorporated into the FY 96 billing process. The working group reviewed the revised handouts included in the letter to the SWRCB.

5. Review of PA Meeting Schedule/Discussion Items. The working group then reviewed the elements of the proposed program to be discussed with the PA's, and individual members updated the group on the status of their presentations to the PA's at the initial meeting (which will be held once the SWRCB approves the draft short-term report). The followon meetings with the PA's could include all the PA's or just selected members interested in special topics such as ADS meters, sampling sites, etc. The assignments for the initial meeting remained the same as proposed during the last working group, and include:

• Strength-based billing program overview -progress to date, schedule, etc.	Hedy Griffiths
• Flow/strength metering/sampling plan and meter/sampler installation schedule	Janet Buttman\ Rod Rippel
• Cost allocation approach	Sudhir Mohleji
• Computer-based allocation model	Robert Martinez
• FY 96 SBB schedule/May 1 estimate	Mary McKinnon
• FY 96 City of San Diego sewer rates	Joe Harris
• PA SBB subcommittee proposal	Hedy Griffiths

6. Review of Mid-term Report Deliverables. The group then reviewed progress toward expanding the basic elements of the program outlined in the short-term report into more comprehensive, detailed policies and procedures for incorporation into the mid-term report, the target date for completion of which is @ September 1, 1995.

A. **Wastewater strength sampling, lab testing and data analysis plan.** Janet Buttman and Armando Villarino advised that they are continuing to work together to get the new meters installed systemwide, and are developing a draft sampling program to present to the PA's following SWRCB approval of the short-term report.

B. **Technical justifications for cost allocations.** Joe Harris agreed to deliver the draft budget projections for FY 96-2004 CIP and O&M costs for MWWD projects to the engineering team members of the working group for the purpose of developing cost allocation percentages.

C. **Development of FY 96-2004 systemwide/individual PA totals for Q/SS/BOD/COD.** MWWD systemwide strength data is still being reviewed and updated by the technical group, and will be supplemented once data begins to become available from the long-term sampling and data analysis effort.

D. **Refinement of cost allocation computer model.** See Item 6 above.

E **Development of billing plan/procedures for FY 96 billings.** Development of a detailed billing plan and procedures is still on hold until the draft sampling plan, the proposed revised cost allocation methodology and the overall strength-based billing program outlined in the short-term report are reviewed and approved by the SWRCB. Management approval of the SBB working group's recommendation to conduct a one-time sampling effort to provide up-to-date data on PA wastewater strength provides necessary direction for establishment of each PA's billing basis for FY 96 .

7. Project Inter/Intra-department Coordination. No items/issues requiring additional inter-intra-department coordination arose at the meeting.

8. Review/Confirmation of Next Meeting. **The next meeting is scheduled for 3:00 PM Wednesday, June 28, 1995, in conference room 5B, MWWD Offices, 600 B Street.**

9. Other Issues. No other issues required working group discussion.

10. Adjournment. The meeting was adjourned at 3:25 pm.

c:\strngmin.645
6/22/95

EXHIBIT 12

THE CITY OF
SAN DIEGO
METROPOLITAN WASTEWATER DEPARTMENT
600 B STREET, SUITE 500 • SAN DIEGO, CALIFORNIA 92101 – 4587
PHONE: (619) 533-4200 • FAX: (619) 533-4267

In reply, please refer to
Chronological Number:
CWP- 132556

May 9, 1995

Mr. Ronald R. Blair, Revenue Program Specialist
State Water Resources Control Board
Division of Clean Water Programs
2014 T Street, Suite 130
P. O. Box 944212
Sacramento, CA 94244-2120

Dear Mr. Blair:

REVENUE PROGRAM REVIEW - CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

The purpose of this letter report is to:

1. provide an initial response to the wastewater user charge system elements of your letter dated September 30, 1994 regarding our Clean Water Grant Project No. C-06-1092; and

2. present a long-range program which the City will develop and execute to make the necessary changes to our wastewater charge system to bring it into compliance with grant requirements as outlined in your letter.

OVERVIEW OF STRENGTH-BASED BILLING FOR PARTICIPATING AGENCIES

The basic premises of this submittal in response to your September 30, 1995 letter are:

1. the data and the draft program submitted in this letter will serve as the initial foundation of a new strength-based billing system to be implemented in Fiscal Year 1996 by the City of San Diego and the Participating Agencies (PA's); and

2. the City and the PA's will review the data and the draft program included in this letter, will incorporate direction and guidance provided to us by your office as a result of your review of this initial submittal, and will execute a revised draft program in order to modify our existing PA billing process and procedures to implement a formal strength-based billing process and procedures for the fiscal year commencing July 1, 1995 (FY96).

132556

STRENGTH-BASED BILLING PROGRAM SUMMARY

The following key elements comprise the City's basic program for converting its existing flow-based billing system for the PA's to a flow- and strength-based billing system as called for in Appendix B, "Guidelines for Administering Fair and Equitable Clause Contained in Clean Water Grant Contracts", of the State Water Resource Control Board's (SWRCB) Revenue Program Guidelines for Wastewater Agencies dated April 1983:

1. draft PA wastewater strength sampling, lab testing and data analysis plan;
2. draft technical justifications for cost allocations for FY 94 CIP;
3. draft FY 94 systemwide totals for flow-Q, suspended solids-SS biochemical oxygen demand-BOD;
4. draft unit rates for Q, SS, and BOD for FY 94;
5. draft cost allocation computer model development plan;
6. draft plan for implementing a strength-based billing system using SS and chemical oxygen demand (COD) as the desired strength parameters; and
7. draft billing plan for issuance of FY 96 billings.

Items 3 and 4 also provide specific responses to your requests for FY 94 data and rates for our system.

The following paragraphs provide a brief overview of each of these strength-based billing program elements.

Draft Sampling, Lab Testing and Data Analysis Plan

In order to implement a strength-based billing program for the PA's, the City is in the process of developing a draft sampling, lab testing and data analysis plan, which includes these major elements:

1. Review of the existing flow metering sites for the PA's to determine their appropriateness for incorporating strength-based sampling equipment. Exhibit 1 identifies locations of existing metering sites. Exhibit 2 identifies the specific location, agency being metered, and type of meter installed at each existing location.
2. Analysis of proposed additional Q/SS/COD metering and sampling sites to provide more accuracy for both the City and the PA's in determining PA influent wastewater characteristics, Exhibit 3.

3. Development of a proposed City and PA plan/schedule to perform preliminary sampling to establish baseline strengths for each PA.

4. Review of use of 1988 Industrial Waste Section (IWS) PA SS and BOD sampling program results for initial FY 96 billings until sufficient FY 96 data is collected and analyzed.

5. Current/proposed City budget actions (FY 95/FY 96) to provide the personnel and equipment resources to implement the plan.

The City intends to build upon its existing flow metering system and procedures to incorporate sampling of PA influent wastewater to determine each agency's SS and COD contributions to the regional system. Exhibits 1 through 3 provide specific information on both the City's existing metering sites as well as those sites being considered by the City and the PA's as additional locations for metering and sampling PA wastewater.

The City is proposing the following sampling program for consideration by the State and the PA's for sampling PA wastewater contributions to the regional system:

1. Frequency of sampling:	3 samples per year at up to 56 sites = 168 samples annually
2. Metering/sampling sites:	31 agency sites 25 City sites
3. Sample type:	24-hour flow-proportioned composite sample
4. Equipment (initial):	AutoSampler with flow-proportioned input (minimum of 6 additional samplers required at an estimated total cost of $50,000)
5. Tests performed:	1 Total Suspended Solids (TSS) test per 24-hour, flow-proportioned composite sample 1 Chemical Oxygen Demand (COD) test per 24-hour, flow-proportioned composite sample

Following discussions with the PA's; Metropolitan Wastewater Department (MWWD) staff are prepared to initiate a sampling program later this year to update the data captured during a one-time, systemwide PA sampling program for SS and BOD performed by the MWWD's Industrial Waste Section staff in 1988. The results of this initial sampling effort will be used for actual FY 96 adjustments and to develop future billings for the PA's based upon Q, SS and COD as outlined in the following sections of this interim report.

The City's FY 96 budget includes funds to upgrade existing ADS flow meters with new or

as well as the additional sites highlighted in Exhibit 2. Once your agency has acted favorably on the proposed sampling program and our budget request is approved by the City Council, MWWD staff will meet with the PA's to determine the most appropriate sites for sampling locations. Once we have agreement with the PA's regarding the proposed sites, equipment will then be purchased and installed. As additional data is captured and analyzed, the City will begin to build a comprehensive database of the flow and strength contributions from both the PA's respective service areas and several key locations and drainage areas within the City of San Diego's service area. This data will augment the 30 years of flow data which has already been collected on PA and City flows throughout the regional system.

The City will also continue to work with the International Boundary and Water Commission (IBWC) to meter and sample flows originating in Mexico which are captured and transported through the IBWC's emergency connection into the San Diego regional system. A sampling program is already being conducted by the City in conjunction with IBWC and Mexican authorities to identify not only the conventional pollutants (SS/BOD-COD) in the Mexican influent, but also those priority pollutants flowing into the system as a result of industrial and commercial activities south of the border. This data will also be incorporated into the overall analysis of wastewater strength systemwide to ensure that all contributors' respective shares of pollutant contributions to the system are accurately identified so that costs can be fairly and equitably apportioned to all users of the regional system as called for in the Revenue Program Guidelines.

The City is planning to use chemical oxygen demand (COD) rather than biochemical oxygen demand (BOD) as a measure of wastewater strength. Other major agencies, such as the County Sanitation Districts of Los Angeles County (CSDLAC) have used COD successfully in establishing influent wastewater strength for their PAs as well as their industrial waste permittees. Previous conversations with you have indicated that there is no preference by your office.

The primary advantages of COD over BOD as a basis for establishing the strength contributions of the Pas' influent wastewater include:

1. refrigeration is not required for COD samples as is the case for BOD samples; this may eliminate the need for 110-volt electrical power lines to be run to each sampling site and for refrigerated samplers.

2. COD tests are much faster, simpler and more cost-effective to run than the BOD tests, which require 5 days to complete.

Preliminary Cost Allocations for FY 94 CIP Projects and O&M Costs

In response to specific guidance you provided via telephone, regarding allocation of capital costs and O&M for Fiscal Year 1994 (FY 94), City staff and engineering consultants conducted an analysis of the projects constituting the MWWD's FY 94 capital improvement program (CIP)

and O&M activities. The approach and results of this preliminary analysis are presented in this submittal, and include:

1. a description of the results of a preliminary technical review of MWWD's FY 94 CIP projects; and

2. spreadsheets identifying allocations to Q/SS/BOD-COD for all of the FY 94 MWWD CIP projects and O&M activities, Exhibits 4-1 and 4-1A through 4-1C.

Preliminary Technical Review of the MWWD FY 94 CIP. The engineering team established to develop preliminary cost allocations for the MWWD FY 94 CIP reviewed cost allocation methodologies employed by other agencies. The chosen approach incorporates a cost allocation methodology which segregates existing facilities/projects under design or construction into two categories:

1. facilities/projects which were specifically designed and operated to transport and/or treat wastewater (i. e., interceptors, headworks, primary sedimentation tanks, trickling filters, etc.); these can be termed direct cost projects; and

2. facilities/projects which are integral elements of a regional system essential to system operation, yet are not specifically designed and/or operated to transport or process wastewater (plant control center, maintenance and administrative buildings, warehouses, plant water systems, etc.); these can be termed distributed cost projects.

The engineering team preparing the FY 94 MWWD cost allocations adapted this approach to incorporate the specific features of the San Diego regional wastewater system. The allocations were based upon a system flow and wasteload model to estimate the relative quantities of flow, SS and BOD received and processed by individual CIP project. This model has been used in preparing flow allocations for the City's ongoing rate program and flow and wasteload projection effort. Inputs to the model were based upon City monitoring reports.

Preliminary FY 94 MWWD CIP Cost Allocations. Exhibit 4-1 and supporting Exhibits 4-1A through 4-1C present the results of our preliminary technical analyses and allocation of MWWD's FY 94 CIP and O&M costs among the three parameters. As outlined in the previous section, individual unit process projects are categorized as direct cost projects, and their specific costs are allocated based upon design loadings, removal efficiencies, etc., whereas the costs for the projects which benefit the Pt. Loma plant as a whole (i. e., the maintenance and administrative building expansion) are viewed as distributed cost projects, and are allocated on a system-wide derived percentage allocation basis.

FY 96 Allocations

An estimate for the FY 96 strength-based billing has been developed based on the City's FY 96 CIP and O&M budget and prior strength data, Exhibit 5. The draft billing includes a detailed analysis and allocation of the FY 96 capital and O&M costs of all MWWD regional facilities, including all conveyance facilities (interceptors and pump stations), wastewater/water reclamation and biosolids treatment facilities (all unit processes), and disposal/reuse facilities (outfall, water repurification facilities, biosolids reuse facilities, etc).

Systemwide Q/SS/COD Totals

This submission identifies flow, SS and COD data on a systemwide basis for the past five years, presents a brief description of the sources of data used in establishing FY 94 data, and outlines an approach for establishing actual flow and wasteload data and for making future projections of flow and loading for:

1. the regional system as a whole; and

2. each of the individual PA's.

Records of influent flow and wasteload conditions at the Pt. Loma Wastewater Treatment Plant (PLWTP), which presently treats the wastewater originating in the San Diego regional system, referred to as the Metro or Metropolitan System, have been maintained by the City of San Diego since operations began in 1963. The City's wastewater flow and quality monitoring program is comprehensive, and is designed to provide information necessary to support several critical utility functions, including wastewater treatment operations, the regional industrial pretreatment program, regulatory compliance activities, and PA billings. Key sources of compiled wastewater flow and quality information include the following:

1. PLWTP Monthly Monitoring Report;

2. Pt. Loma Ocean Outfall Annual Monitoring Report;

3. systemwide, sub-basin and PA flows;

4. PLWTP influent and unit process flow and strength; and

5. special investigations.

A summary of the past 5 years of systemwide flow and wasteloadings is presented in Table 1 below. As indicated in the footnote to the table, these flows include the contribution from the IBWC emergency connection, but exclude return flows to the PLWTP from the Fiesta Island Sludge Dewatering Facility. The City does not expect to continue to receive flow from the

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IBWC emergency connection once the IBWC's international treatment plant is placed into operation, expected in calendar year 1996.

TABLE 1
SYSTEMWIDE FLOW AND WASTELOAD GENERATION[a]

FY	Flow[b] (mgd)	TSS (lbs/day)	BOD_5 (lbs/day)
1990	190	463,000	448,000
1991	178	438,000	450,000
1992	175	420,000	397,000
1993	188	419,000	397,000
1994	175	389,000	399,000

[a] Includes Tijuana Emergency Connection flows, excludes return flow from Fiesta Island Sludge Dewatering Facility.
[b] Average annual daily conditions.

Future wastewater flow and wasteload projections for the regional system are currently being prepared. In general, these projections will be based upon disaggregated population forecasts for sewered areas across the regional system service area, and will reflect unit generation rates for Flow, TSS and COD.

Draft Unit Rates for Q/SS/BOD for FY 94

Table 2 presents draft unit rates which allocate FY 94 CIP and O&M costs to each individual wastewater parameter. These draft unit rates can be used as a baseline by the City and the PA's for review and comparison of proposed draft unit rates for Q, SS and COD for FY 96 and future years. Please note that BOD is used as a strength parameter for the FY 94 draft rate calculations since we tested for BOD and not COD during the 1988 sampling program. We will conduct tests for COD rather than BOD in our proposed new sampling program. The unit rates for FY 96 and beyond are expected to shift toward higher rates for SS and COD since the new facilities under design and construction by MWWD are advanced treatment facilities designed primarily to achieve higher removals of SS and COD from the influent wastewater.

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TABLE 2.
UNIT COST DETERMINATION FOR FISCAL YEAR 1994

TREATMENT PARAMETER	REVENUE REQUIREMENTS, $[a]	UNITS	COST PER UNIT
TOTAL WASTEWATER FLOW	$48,399,074	64,167.0[b]	$754.27[d]
TOTAL SUSPENDED SOLIDS (TSS)	$30,324,231	148,622.2[c]	$204.04[e]
TOTAL BIOCHEMICAL OXYGEN DEMAND (BOD)	$20,864,222	147,702.0[c]	$141.26[e]
TOTAL	$99,587,527		

(a) Includes Operations & Maintenance, Repair, Replacement, & Betterment Costs
(b) Million gallons per year
(c) Thousands of pounds per year
(d) Per million gallons
(e) Per thousand pounds

Draft Cost Allocation Computer Model Development Plan

In order to satisfy the PA's that their respective billings are properly calculated, the City currently employs a flow-based computer cost allocation and billing model which:

1. defines MWWD's budgeted and projected CIP, capital financing and O&M costs for the next ten years;

2. identifies each PA's flows; and

3. breaks out each agency's annual costs for its respective share of capacity rights and anticipated flow-based use of the regional system.

Expansion of the current flow-based cost allocation and billing system to incorporate each PA's wasteload characteristics has required development of another, more comprehensive model. The City of San Diego has thus developed a draft computer model which allocates the annual costs of the regional system to the PA's based on wastewater flow and strength. The new model will allow the City to provide the PA's with long-range estimated budgeting and billing information. The estimates developed for the PA's by this cost allocation model will enable them to incorporate projected costs into their respective budgeting and ratesetting processes. A key feature of the model will be its compatibility with the Sewer Revenue Fund Financial/Rate Model.

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The schedule for implementation of an appropriate cost allocation model includes the following proposed milestones and projected completion dates:

TABLE 3.
IMPLEMENTATION SCHEDULE FOR COST ALLOCATION MODEL

Milestone	Projected Completion Date
1. Define/identify input and output requirements.	Completed
2. Review Existing Cost Allocation Models and Identify Strengths and Weaknesses.	Completed
3. Determine if City should acquire existing cost allocation model or develop its own.	Completed
4. Acquire an existing model and revise as necessary or develop a City model.	Completed
5. Provide test data for review by other team members.	Completed
6. Review the sample output with MWWD management, the City Executive Committee, the PA's (and the SWRCB if the SWRCB desires to review the model) and revise as directed.	May 12, 1995
7. Finalize computer modelling and provide documentation for operation of the computer model by City staff, the PA's and other consultants (if so directed by the City).	June 30, 1995

Draft Plan for Implementing a Strength-based Billing System

Section 7 of the City's existing Sewage Disposal Agreements (SDA's) with the PA's calls for the City to "...maintain, manage and control the Metropolitan Sewerage System in an efficient and economical manner...(and) convey, treat...and dispose of all sewage received into the ... System under the terms of this contract in such manner as to comply with all applicable laws, rules and regulations." Section 6 requires the PA's to "..comply with the applicable statutes, rules and regulations of agencies of the United states of America, the State of California, and the County of San Diego, having jurisdiction over the collection, transmission, treatment, and disposal of sewage and wastes." These sections of the existing SDA's provide the City with the ability to develop a strength-based billing system to comply with the Clean Water Act and its implementing regulations (the SWRCB's Revenue Program Guidelines).

The City is examining the issue of whether amendments to the SDA's are appropriate given the current situation. At this point, the decision to amend the SDA's has not been resolved.

132556

Draft Billing Plan for Issuance of FY 96 Billings

The City recognizes that implementation of a more complicated billing process which incorporates PA wasteload characteristics will require several meetings with the PA's to discuss the proposed new billing procedures, formats, etc., the proposed metering/sampling program, and the cost allocation methodology, etc. Meetings will be scheduled with PA representatives to discuss the various elements of the proposed billing procedures and formats as well as the methodology employed to allocate costs, once approval of this plan is received from your office.

The billings will be developed based on the information available after close of FY 95 in late summer: budget projections for FY96, flow and sampling data obtained to date and the cost allocation method by loading parameters (Q, SS and COD) for capital cost, operations and maintenance cost. The revised format will be consistent with current City of San Diego billing format modified to display the strength-based allocation to all PA's in accordance with the "fair and equitable" guidelines in the Clean Water Act.

The following schedule identifies the tasks and target dates for commencing strength-based billings in FY 96:

05/15/95 Mail each PA a preliminary estimate of their respective shares of the proposed FY 96 budget based on allocation of the proposed budget of estimated costs for FY96 to flow, suspended solids and COD.

06/01/95 Meet with PA representatives to discuss optional billing formats to include strength-based allocation of costs, unit costs for each parameter, sampling sites, etc.

07/03/95 Prepare an initial draft estimated strength-based billing for each PA to include costs for the proposed FY96 budget, sample data and allocation methods available to date.

08/01/95 Mail the PA first quarter strength-based billings for FY96.

11/01/95 Mail the PA second quarter strength-based billings for FY96 and adjusted FY95 flow-based billings.

01/30/96 Mail PA third quarter strength-based billings for FY96.

05/01/96 Mail PA fourth quarter strength-based billings for FY96.

05/01/96 Mail PA estimated FY 96 Adjustment and FY 97 Budget Estimates based on flow, suspended solids and COD.

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FUTURE REPORTS

Once we receive your comments on this proposed draft program, we will commence meeting with the PA's to review and achieve consensus on the various elements of the proposed program. We also expect to produce a more detailed report later this year which will present our final program and will include the specific policies: procedures, metering/sampling schedules and locations, computer model, and FY 96 budget and billing format for implementing strength-based billing.

Please contact either Hedy Griffiths or Charles E. Mueller, Jr. of my staff should you have any questions regarding the material submitted or our progress in implementing strength-based billing. Hedy can be reached at (619) 533-5420, and Chuck can be reached at (619) 533-5360.

Sincerely yours,

F. D. Schlesinger
Director, MWWD

cc: Executive Committee
Finance Team
Staff

EXHIBIT 13

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF CLEAN WATER PROGRAMS
2014 T STREET, SUITE 130
P.O. BOX 944212
SACRAMENTO, CA 94244-2120
(916) 227-4489
(916) 227-4595 FAX

SEP 30 1994

Mr. Jack McGrory
City Manager
City of San Diego
202 C Street
San Diego, CA 92101-4230

Dear Mr. McGrory:

REVENUE PROGRAM REVIEW -- CITY OF SAN DIEGO, CLEAN WATER GRANT PROJECT NO. C-06-1092

I wish to express my appreciation for the cooperation the staff of the City of San Diego (City) gave me during my recent visit to your office. The following information is requested by November 1, 1994, to complete my review of the City's compliance with the requirements of USEPA's Clean Water Grant requirements.

1. Please explain the purpose and rational of the "reverse repurchase agreement" item that appears in the wastewater budgets and audits.

2. Please provide the legal basis for charging the wastewater fund for "use of city owned right-of-way. Also provide the data that was used to determine the amount that is charged for this item.

3. Please provide the rational for charging "outside city" direct billed accounts twice the normal rate for sewer service. Under USEPA regulations the City must charge all users in proportion to the cost of providing treatment services.

In addition, the City must adopt the following changes to bring its wastewater user charge system into compliance with the requirements of the existing and past Clean Water Grants.

a. The City must modify their agreements with all participating agencies to include charges for BOD and TSS content as well as flow discharged into City facilities.

b. The City must include septage discharges into their rate ordinance/resolution. The City is accepting discharges from septage haulers. However, I was unable to find any mention of septage haulers in the City rate codes.

DK 02264-5
DK 02312-3
DK 05453

SEP 30 1994

Mr. Jack McGrory - 2 -

c. The City must develop forecast unit costs, including appropriate indirect markups, for wastewater flow, BOD removal and TSS removal. These unit costs should be based on the prior year's costs and forecast increases. The forecast unit costs must be transmitted to all participating agencies as soon as possible each year to allow them to implement any needed rate adjustments prior to the start of the next fiscal year.

Please provide the information requested in Items 1-3, above and a timetable for compliance with Items a-c by November 1, 1994. If you are unable to meet this deadline please contact me at (916) 227-4489.

Sincerely,

Ronald R. Blair
Revenue Program Specialist

DK 05454

EXHIBIT 14

City of San Diego
METROPOLITAN WASTEWATER DEPARTMENT
MEMORANDUM
533-4200

In reply, please refer to
Chronological Number:
CWP-_____

DATE: August 18, 1995

TO: Bill Hanely, Deputy MWWD Director, Service and Contracts Division

FROM: Hedy R. Griffiths, Supervising Management Analyst

SUBJECT: SWRCB Feedback - EPA Grant Project No. C-06-1092

This morning I received a return call from Ron Blair, SWRCB. Information on Strength Based Billing (SBB) had been sent May 9, 1995 and June 12, 1995 in response to information he requested by letter dated September 30, 1994 after a grant related audit.

Mr. Blair responded on June 9, 1995, requesting further response to three questions related to passing costs on to the Participating Agencies. Response was sent on July 31, 1995.

In my conversation this morning, Ron told me he did not agree to our response to No. 2, sent last month.

Attached is a summary of information, with attachments for you and the Attorney's Office. Others listed on distribution should contact me at 3-5420 if they wish attachment copies.

HEDY R. GRIFFITHS

[SWRCB.ATY]HRG:
Attachment(s):

cc: Dave Schlesinger
Ted Bromfield
Kelly Salt
Bill Butler
Mick Gammon

DK 02310

UPDATE ON CONVERSATION WITH RON BLAIR, SWRCB
EPA GRANT PROJECT NO. C-06-1092
Facility Planning $8.7M grant funded (SWRCB 12.5%,EPA 75%)
South Bay Land Outfall $10.03M grant funded (SWRCB 12.5%,EPA 55%)

September 30, 1994 Letter (attached) to Jack McGrory from Ron Blair (SWRCB) audit requested information, Nos. 1,2 and 3 and noted the City adopt changes on a,b and c.

June 9, 1995 letter (attached) acknowledged receipt of Dave Schlesinger May 9, 1995 letter in response to a, b, and c. Request response to Nos. 1,2,3 by August 1, 1995.

In letter and again in conversation on 8/18 with Hedy Griffiths, Ron sees no violation of Clean Water Grant program related to a, b, and c. However, will "withhold approval of any specifics until the City has completed the process of reviewing and renegotiating interagency agreements."

8/18 conversations, said he heard we were proposing $30M to upgrade monitoring for suspended solids. Told him we would be spending about $600 K on upgrades to meters (not just for suspended solids, some meters old). I think someone has heard of COMNET and thinks it relates to PA meters.

June 12, 1995 letter (attached) with supplemental info on I/I and centrate flow originating at Fiesta Island biosolids de-watering facility, to Ron Blair from Hedy Griffiths.

July 31, 1995 letter (attached) sent Ron Blair by Dave Schlesinger with response to Nos. 1, 2 and 3.

8/18/95 Hedy Griffiths conversation with Ron Blair - no further question at this time on Nos. 1 and 3. Following is heads up on No. 2 - Right of Way issue.

2. Please provide the legal basis for charging the wastewater fund for "use of city owned right-of-way. Also provide the data that was used to determine the atmount that is charged for this item.

8/18/95 Hedy Griffiths conversation with Ron, he does not feel he can sign off on this, he feels the charges are "inappropriate". Feels there is no value involved, as there is no diminished useage, i.e. "can stll use the street on top.."

Ron says, even if decided appropriate to charge, the charges are excessive and if not resolved through the lawsuit or politically, he WILL deny approval.

Ultimate outcome would be to not approve the City's revenue program which could lead to return of grant funds, amounts shown above - ($18.73 M)

[SWRCBPA.ATY]

EXHIBIT 15

CHESTER ENGINEERS

600 Clubhouse Drive
Pittsburgh, Pennsylvania 15108
412-269-5700

Facsimile Transmittal

Date: January 23, 1997

Please Deliver To: Hedy Griffiths

Location: San Diego Metropolitan Wastewater Department

FAX No: (619) 533-4267 Company No.: (619) 533-5420

Total Number of Pages (including this sheet): 3

From: Mike McKee Sender's Phone (412) 269-5832

Comments: Description of flow information for sewer cost of service study.

You can reach our FAX machine 24 hours a day. Dial 412-269-5865
If you do not receive all pages in good condition, please call

Operator No.: _____ Ask for: _____

Time Sent: 11:30 Project/Charge No.: 5413-01

Sent By: MFM Department No.: IC-43

To: Hedi R. Griffiths
City of San Diego Metropolitan Wastewater Department

From: Mike McKee, Chester Engineers

Date: January 23, 1997

Subject: Information for Sewer Cost of Service Study

Carol McCombs said she talked to you yesterday and suggested that I send you a fax to explain in more detail the kind of information that we are looking for relative to flow monitoring records for the strength based billing sites.

The State Water Resources Control Board requires that the costs of infiltration and inflow (I/I) be allocated to the system users when preparing a user charge system. Previous reports (November 1988 Metro Financial Plan and March 1990 Wastewater Rate Study) have indicated that peaking factors do not vary significantly among the participating agencies (PAs) based on comparisons of peak month to average month flows. From this analysis, it was assumed that I/I rates are similar throughout the Metro system. However, we spoke to several people in November who suggested that this is probably not the case. As we understand it, there is a significant amount of flow monitoring information available for various sites throughout the system. We would like to review and analyze this information to determine the relative amounts of I/I that are generated within the City and the outlying areas.

Our initial request for flow monitoring records from all strength based billing sites for a one-year period (hourly flows on computer disk if available) was a general request that was made prior to having any information on total system flows. We recently received 1996 daily flow records for the Point Loma plant, including minimum and maximum flows rates at Metro Pump Station No. 2 and return flows from Fiesta Island. Based on this flow information, the time periods for review can be reduced significantly. The Point Loam plant received an average influent flow of 178.9 million gallons per day (mgd) in 1996. The plant received total flows of approximately 218 mgd on both March 13 and 14 and a maximum day flow of 259 mgd on November 22. Analysis of flows at the monitoring site on these dates would provide information regarding the amount of inflow that the system receives. Similarly, infiltration rates can be determined by reviewing flow records during periods when significant rainfall events do not occur and cause inflow to occur. It appears that June 1996 was a period of sustained low system flows (172.07 mgd average) and September 1996 has slightly higher flows (179.45 mgd average). Review of flow monitoring records for a week long period during each of these months would establish dry-weather and wet-weather infiltration rates for different parts of the system.

We would appreciate your assistance in obtaining flow monitoring information for the strength based billing sites for the following time periods:

March 13, 1996
March 14, 1996
November 22, 1996
A week during June 1996
A week during September 1996

We will take the information in whatever form you can provide it (computer printout, paper copy, computer disk for use with spreadsheet program). The minimum time interval for flow measurements should be an hour for the type of analysis that we want to do. However, smaller intervals are great if the information exists at that level of detail. The weeks chosen in June and September do not matter since the flows were relatively constant during those months.

Carol also mentioned that you had some new information regarding strength of wastewater within the City. We have the strength based billing information that you gave us in November, as well as the allocation factors based on the functional design approach. We would appreciate a copy of any strength information that would modify the data that were currently have. This would include average measured BOD/COD and SS concentrations for the City and PAs that will be used for future billing purposes, if these figures have been finalized.

I will call you later today to see if you have any questions about the information that we are looking for.

EXHIBIT 16

From: Hedy Griffiths
To: SD_CITY.WU_CIS(JPA), SD_CITY.WU_MIS(DVW), SD_CITY....
Date: 3/14/97 9:36am
Subject: C.O.D UPDATE -Reply

Conference Room 6A will be the meeting site. Robert Martinez, Mary McKinnon and I will be in attendance. See you then and Armando
Hedy

>>> Corinne Smith 03/12/97 06:35pm >>>
Debbie,

On Friday March 7th , Jerry and I met with Dennis Kahlie and Phil Moffet to discuss the possibility of adding COD criteria into the sewer rate structure and CIS.
They hoped to have this implemented by July 97.

Today I met with MWWD (Hedy Griffith & Robert Martinez) to discuss where they were with this project.
They hope to implement COD billing by July 97 for the Participating Agencies.
There is no data to implement this for the city's rate payers.
And unfortunately there is no corrolation between TSS and COD
I invision we will follow the same basicsteps as we did for the TSS implementation .

In any case, we thought now is a good time to get started on this project. A meeting has been scheduled for Tuesday, March 18th at 0830, with the MWWD LAB to discuss lab sampling criteria.

Hedy will advise of the exact location
Will keep you posted . Corinne
cc:jpa,

EXHIBIT 17

Sewer Classification - Meeting on 3/18/97

Attendees:	Corrine Smith	Sewer Classification Section	WUD
	Armando Villarino	Environmental Monitoring/Technical	MWWD
	Hedy Griffiths	Services & Contracts	MWWD
	Mary McKinnon	Services & Contracts	MWWD

The meeting took place in response to the need to implement Strength Based Billing (SBB) with City of San Diego Municipal customers as well as Participating Agencies (PA s).

There was some discussion about SBB (billing on flow, TSS and COD), the status of implement billing changes to the PA s, the federal requirement of "fair and equitable billing", sampling status in preparration for invoicing the Participating Agencies and the beginning of sampling of industrial customers under Rod Ripple's section.

Corrine briefed us on the prior sampling program for flow and TSS, provided an explanation of industry classifications and percent of return to sewer included in the category matrix. She also discussed the need for programming changes on the OIS and CIS system for implementation.

Action Items

Corrine will provide Armando with categories and addresses typical of categories so that he can start sampling.

She will also provide written information on Sewer Classification to MWWD

Hedy will provide information given Participating Agencies on sample methodology and PA results to date.

Armando will begin sampling Municipal commercial customers, estimating October 1 as a completion date to sample a minimum of 3 times per category.

March 21, 1997 - Update

Since the meeting, the following has taken place:

Survey - Survey questions established by Hedy will be forwarded by Email to Corrine who will conduct a survey of other agencies in CA. Except for our Participating Agencies, MWWD Agency Contracts Section will survey PA s.

A separate job order is not needed by MWWD for the Sewer Classification survey. Corrine, if you need one for your purposes, let Clay know. Thanks.

[MUNISBB.HRG]

From: Hedy Griffiths
To: MWIWL.AXV, SD_CITY.WU_CIS.CTS
Date: 3/21/97 3:53pm
Subject: Sewer Classification - Municipal Customers

Attached are notes on the meeting of 3/18/97 re the above subject.

Also attached is a survey for use by the Sewer Classification Section and Agency Contracts.

If you have any comments or questions, please call me x35420

CC: WZH, SD_CITY.WU_MIS.DVW, mwharbor.AXL, CCB, MMM, c...

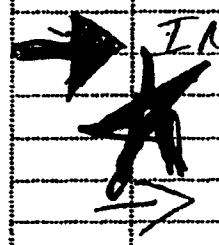
EXHIBIT 18

Add C.O.D. element into CORINNE

CITY OF SAN DIEGO
ESTIMATING SHEETS

SUBJECT COD / Cost of Services Study

By 7/24/97
Date 19
No.

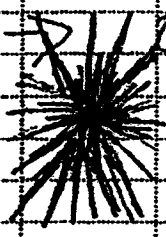


INTRO - FED FUNDS / GRANTS
STRENGTH Base Billing W/PA
Flow / TSS
Need to Add BOD or COD

TRMNT Flow
TSS
COD
} Users Newton PA

Need Copy of Draft = of Cost of Services

90% of Com/Ind fall under



Bulk
Cof S Study
Metro / Flow / TSS /
~~30~~ / Commercial Metro

Ron Blair - SI

Next Meeting
Notification
Classification
Implementation

FORM CE-291

EXHIBIT 19

CITY OF SAN DIEGO

MEMORANDUM

8

DATE: August 8, 1997

TO: Coleman Conrad, Deputy City Manager, MS 9A

FROM: William J. Hanley, III, Deputy Metropolitan Wastewater Director, Services & Contracts

SUBJECT: Implementation of Strength Based Billing

This memorandum responds to your request for an update and schedule for the implementation of strength based billing for sewer services. Staff from MWWD, the Water Department and Financing and Technical Services have, to date, held two meetings to identify implementation issues, with a third scheduled for the week of August 11th.

The first two meetings helped us identify two main issues that must be addressed in the move to strength based billing. The first involves COD(chemical oxygenated demand) as a measure of sewage strength. We are going to need to conduct tests, possibly extensive tests, to ascertain how measurements of COD relate to our existing customer rate codes which are presently based on flow and TSS(total ~~dissolved~~ suspended solids) only. We may find, likely will find, that modifications to our existing rate codes or a different breakdown of rate codes may be the answer. Once new codes are established, field investigations must be conducted to match customers to rate codes. A second issue, related to the first, is that once we have done our testing and established appropriate rate codes and charges, the automated billing system will have to modified or redone to reflect the addition of the COD criteria.

At our meeting this coming week we are scheduled to receive preliminary estimates on the time needed for testing to establish COD billing categories and the time needed by SDDPC to modify our billing system. Financing Services staff have been participating in our meetings and concur with our plan to implement strength based billing for the FY 1999 Fiscal Year. At the conclusion of the meeting next week, we will be in a position to provide

you more specificity regarding this schedule, taking into account the timing issues related to the establishment of billing categories, modification of the billing system, and completion of the Cost of Service Study. In any event, the schedule will be designed to insure implementation in FY 1999.

Bill

WILLIAM J. HANLEY, III
Deputy Director
Services & Contracts

CCB:mr

cc: Dave Schlesinger
George Loveland, MS 43A
Susan Hamilton
Debbie Van Wanseele, MS 913
Alan Langworthy, MS 45A
Clay Bingham
Hedy Griffiths
Phil Moffitt, MS 7B
Jerry Alesi, MS 911
Corinne Smith, MS 911

[:ODMA\SOFTSOL\311\WW1\43062\0]

Now FY 98.
By July 99?
Yeah Right!
Less than
10 months
to do

EXHIBIT 20

THE CITY OF SAN DIEGO

August 13, 1997

Mr. Ron Blair
Revenue Program Specialist
State Water Resource Control Board
P.O. Box 944212
Sacramento, CA 94244-2120

Dear Mr. Blair:

Subject: First Quarter Fiscal Year 1998 Invoice to Participating Agencies

This letter supersedes the August 12, 1997 letter sent yesterday on the same subject which included copies of invoices rather than copies of sampling information.

As stated, the information is to keep you updated concerning the status of introducing Strength Based Billing to the Participating Agencies. The enclosures provide you with information sent the Participating Agencies with their invoices.

Enclosed are copies of letters to Chula Vista, Del Mar and Padre Dam with revised sheets on sampling data points. These were the only changes from the May 1 estimate sent earlier. Also enclosed are spreadsheets showing costs for Fiscal Year 1998, estimated credit for Fiscal Year 1997 and tables which show wastewater characteristics by individual participating agency and allocation of costs based on Flow, Suspended Solids and COD samplings.

DIVERSITY

Metropolitan Wastewater • Public Works
600 B Street, Suite 500 • San Diego, CA 92101-4587
Tel (619) 533-4200 Fax (619) 533-4267

As mentioned in the previous letter, my staff and I are meeting with each agency individually to provide a general presentation and to discuss specific issues with them. Enclosed is a letter sent Padre Dam confirming our meeting, with attachment and a list of the scheduled meetings. I'll send you a hard copy of the presentation material when completed.

Sincerely,

Hedy R. Griffiths

HEDY R. GRIFFITHS
Supervising Management Analyst
Agency Contracts - Flow Metering

HRG:ls

Enclosures: Letter to Del Mar, Chula Vista, and Padre Dam with Sampling Sheets
Summary of Spreadsheets with Attachments
Padre Dam Letter Re: FY 98 Billing
Presentations Schedule

cc: Bill Hanley, Deputy Director
Peggy Merino, Associate Management Analyst

[SS#43214]

EXHIBIT 21

Pete Wilson
Governor

CalEPA

State Water Resources Control Board

Division of Clean Water Programs

Mailing Address:
P.O. Box 944212
Sacramento, CA
94244-2120

2014 T Street,
Suite 130
Sacramento, CA
95814
(916) 227-4355
FAX (916) 227-4349

SEP 22 1997

Ms. Hedy R. Griffiths
Supervising Management Analyst
Metropolitan Wastewater Department
City of San Diego
600 B Street, Suite 500
San Diego, CA 92101-4587

cc: Bill Harley
Mick Gammon
Richard Enriquez

Dear Ms. Griffiths:

APPROVAL OF DRAFT REVENUE PROGRAM – CITY OF SAN DIEGO, STATE REVOLVING FUND (SRF) LOAN PROJECTS NOS. C-06-4119-310, C-06-4119-410 AND C-06-4119-510

I have reviewed your letters dated July 21, 1997 and August 13, 1997, and a letter dated August 18, 1997, from Mr. Mick Gammon. I am approving the City's draft wastewater revenue program for the above referenced projects to allow these projects to be considered for SRF loan funding.

The following SRF Program requirements must be satisfied before the Division can issue a loan contract:

1. An ordinance or resolution dedicating a source of revenue for repayment of the SRF loan must be adopted and approved. To avoid delays, it is recommended that a draft of this ordinance or resolution be submitted for our review at your earliest convenience. This will avoid delays in State Water Board action on your loan commitment. The proposed ordinance should contain language equivalent to the following:

   "The City of San Diego hereby dedicates the following source of revenue (user charge, proceeds of revenue bonds, etc.) to repayment of any and all State Revolving Fund loans on Project Nos. C-06-4119-310, C-06-4119-410 and C-06-4119-510. This dedicated source of revenue shall remain in effect until such loan (or loans) is fully discharged unless modification or change of such dedication is approved in writing by the State Water Resources Control Board."

2. An ordinance or resolution dedicating a "Wastewater Capital Reserve Fund" (WCRF) must also be adopted and approved. Detailed requirements for the WCRF will be found on pages 19 and 20 of the January 18, 1996 version of the "Policy For Implementing The State Revolving Fund For Construction Of Wastewater Treatment Facilities".

SWRCB 0527
MWWD-BH0222

Bromfield COS003255-3256

A final revenue program and a draft sewer rate ordinance must be submitted and approved by this office prior to payout of loan proceeds in excess of 90 percent of the loan amount.

If you have any questions regarding this letter, please contact me at (916) 227-4489.

Sincerely,

Ronald R. Blair
Revenue Program Specialist

EXHIBIT 22

Exit Saturnia

Had a complaint from consultant of member agency Meadows not be charged for strength of flow - but the flow

Revenue $ program should charge for strength factor

The reason the charge weren't made was because a District was going to be performed

① Negotiate with participating agency to charge charges for flow - No retroactive

EXHIBIT 23

THE CITY OF SAN DIEGO

August 31, 1998

Mr. Ronald R. Blair
State Water Resources Control Board
Division of Clean Water Programs
P. O. Box 944212
Sacramento, California 94244-2120

Dear Mr. Blair:

Enclosed for your records is a copy of the fully executed Regional Wastewater Disposal Agreement between the City of San Diego and the Participating Agencies in the Metropolitan Sewerage System.

On another topic, you previously sent me a copy of the "Wastewater User Charge Survey Report for Fiscal Year 96, "A Summary and Listing of Data from an October 1995 - February 1996 Survey of California Wastewater Agencies. As this report is so informative, we would like to receive four copies of any updates. Thank you.

If you have any questions concerning the enclosed agreement, please contact me at (619) 533-5420.

Sincerely,

Hedy R. Griffiths

HEDY R. GRIFFITHS
Supervising Management Analyst, Agency Contracts

xxx:hr

Enclosure(s): Regional Wastewater Disposal Agreement...

cc: Mick Gammon, City of San Diego, MWWD
[G:\AGENCIES\SHARED\PAISSUES\CONTRACT.SWJ]

Metropolitan Wastewater • Public Works
600 B Street, Suite 500 • San Diego, CA 92101-4587
Tel (619) 533-4200 Fax (619) 533-4267

DUPLICATE

REGIONAL WASTEWATER DISPOSAL AGREEMENT

BETWEEN

THE CITY OF SAN DIEGO

AND

THE PARTICIPATING AGENCIES

IN

THE METROPOLITAN SEWERAGE SYSTEM

/

DOCUMENT NO. 00-18517

FILED MAY 18 1998

OFFICE OF THE CITY CLERK
SAN DIEGO, CALIFORNIA

REVISED 3/2/98

SWRCB0376

6-30-05 COS SEC Subpoena

REGIONAL WASTEWATER DISPOSAL

AGREEMENT

TABLE OF CONTENTS

		Page
Cover Page		1
Table of Contents		2
Recitals		3
I.	Definitions	4
II.	Ownership and Operation of the Metro System	6
III.	Payment and Monitoring Provisions	10
IV.	Capacity Rights	12
V.	System of Charges	13
VI.	Planning	17
VII.	Facilities Solely for New Contract Capacity	18
VIII.	The Metro Commission	20
IX.	Dispute Resolution	20
X.	Insurance And Indemnity	21
XI.	Interruption Of Service	22
XII.	Notices Required Under Agreement	22
XIII.	Effective Date Of Termination	23
XIV.	General	24

Exhibits

A. Metro Facilities

B. Contract Capacities

C. Existing Capacity Charge Listing

D. Notice Listing

E. Reclaimed Water Distribution System

REGIONAL WASTEWATER DISPOSAL AGREEMENT

THIS REGIONAL WASTEWATER DISPOSAL AGREEMENT is made and entered into this _____ day of _____, 1997, by and between the CITY OF SAN DIEGO, a municipal corporation ("the City"); and the CITY OF CHULA VISTA, a municipal corporation; the CITY OF CORONADO, a municipal corporation; the CITY OF DEL MAR, a municipal corporation; the CITY OF EL CAJON, a municipal corporation; the CITY OF IMPERIAL BEACH, a municipal corporation; the CITY OF LA MESA, a municipal corporation; the LEMON GROVE SANITATION DISTRICT, a political subdivision of the State of California; the CITY OF NATIONAL CITY, a municipal corporation; the CITY OF POWAY, a municipal corporation; the WINTER GARDENS SEWER MAINTENANCE DISTRICT, a maintenance district established pursuant to California Streets & Hwys. Code section 5820 et seq.; the ALPINE SANITATION DISTRICT, a political subdivision of the State of California; the LAKESIDE SANITATION DISTRICT, a political subdivision of the State of California; the SPRING VALLEY SANITATION DISTRICT, a political subdivision of the State of California; the OTAY WATER DISTRICT, a political subdivision of the State of California; and the PADRE DAM MUNICIPAL WATER DISTRICT, a political subdivision of the State of California (the "Participating Agencies").

RECITALS

WHEREAS, the City and the Participating Agencies are autonomous entities each having the authority to provide and to contract for the conveyance, treatment and disposal of wastewater.

WHEREAS, each Participating Agency currently has a contract with the City to provide wastewater conveyance, treatment and disposal services through the Metropolitan Sewerage System (Metro System), a system of wastewater conveyance, treatment and disposal facilities.

WHEREAS, each of the Participating Agencies has specified capacity service rights in the existing Metro System pursuant to pre-existing agreements with the City.

WHEREAS, the purposes of this Agreement are: 1) to replace the existing sewage disposal agreements between the City and the Participating Agencies; 2) to provide certain contract rights to capacity in the Metro System to the Participating Agencies; 3) to establish a mechanism to fund the planning, design, construction, operation and maintenance of the Metro System by the City and the Participating Agencies as necessary to provide hydraulic capacity, and to comply with applicable law and with generally accepted engineering practices; and 4) to establish a system of charges which allocates the costs of the planning, design and construction of such new wastewater conveyance, treatment and disposal facilities as are necessary solely to provide for new capacity on a fair and equitable basis.

THEREFORE, in consideration of the mutual promises set forth herein, the City and the Participating Agencies agree as follows:

I. DEFINITIONS

A. **Annual Average Daily Flow** is the number, in millions of gallons of wastewater per day ("MGD"), calculated by dividing total Flow on a fiscal year basis by 365 days.

B. **Capital Improvement Costs** are costs associated with the planning, design, financing, construction, or reconstruction of facilities.

C. **Chemical Oxygen Demand or "COD"** means the measure of the chemically decomposable material in wastewater, as determined by the procedures specified in the most current edition of "Standard Methods for the Examination for Water and Wastewater," or any successor publication which establishes the industry standard.

D. **Contract Capacity** is the contractual right possessed by each Participating Agency to discharge wastewater into the Metro System pursuant to this Agreement up to the limit set forth in Exhibit B attached hereto. Contract Capacity is stated in terms of Annual Average Daily Flow.

E. **Flow** is the amount of wastewater discharged by the City and each Participating Agency.

F. **Functional-Design Methodology** shall mean the process of allocating Operation and Maintenance Costs and Capital Improvement Costs to Flow and Strength parameters recognizing the benefits of both the design criteria and the primary function of a unit process.

G. **Metro System Costs** are those costs set forth in Section V.B.1.

H. **Metro System Revenues** are those revenues set forth in Section V.B.2.

I. **Metropolitan Sewerage System or Metro System** shall mean and consist of those facilities and contract rights to facilities which are shown and/or described in Exhibit A attached hereto and incorporated by this reference, including any amendments thereto authorized by this Agreement.

J. **Municipal System** shall mean the City's wastewater collection system, which consists of pipelines and pump stations, that collects wastewater within the City

of San Diego and conveys it to the Metropolitan Sewerage System for treatment and disposal.

K. **New Capacity** is the capacity to discharge wastewater outside the Metro System, above the Contract Capacity set forth in Exhibit B attached hereto.

L. **New Contract Capacity** is the capacity to discharge wastewater into the Metro System, above the Contract Capacity set forth in Exhibit B attached hereto.

M. **North City Water Reclamation Plant** is the 30 million gallons per day (as of the date of this Agreement) wastewater treatment facility which includes four major processes: primary treatment, secondary treatment, tertiary treatment, and disinfection.

N. **Operation and Maintenance Costs** are the costs of those items and activities required by sound engineering and management practices to keep the conveyance, disposal, treatment, and reuse facilities functioning in accordance with all applicable laws, rules, and regulations.

O. **Point Loma Wastewater Treatment Plant** is the 240 million gallons per day (as of the date of this Agreement) advanced primary treatment plant which includes four major processes: screening, grit removal, sedimentation, and digestion.

P. **Reclaimed Water (or Recycled Water)** shall have the definition set forth in Title 22, Division 4 of the California Code of Regulations and shall mean water which, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that otherwise could not occur.

Q. **Reclaimed Water (or Recycled Water) Distribution System** shall mean and consist of those eight (8) reclaimed water projects listed in Attachment B of the Stipulated Final Order for Injunctive Relief approved by the U.S. District Court on June 6, 1997 in U.S.A. v. City of San Diego, Case No. 88-1101-B, and attached hereto as Exhibit E.

R. **Repurified Water** shall mean water which, as a result of advanced treatment of reclaimed water, is suitable for use as a source of domestic (or potable) water supply.

S. **Return Flow** shall mean the effluent created by the dewatering of digested biosolids, which includes centrate.

T. **Reuse** shall mean to use again, such as water which has been reclaimed or repurified, or sludge that has been converted to biosolids for beneficial use.

U. South Bay Land/Ocean Outfall is the facility that is jointly owned by the International Boundary & Water Commission (U.S. Section IBWC) and the City of San Diego. The Outfall is planned to convey and discharge treated effluent from the IBWC's International Wastewater Treatment Plant and treated effluent from the City's South Bay Water Reclamation Plant and the South Bay Secondary Treatment Plant. As of the date of this Agreement, the Outfall has a current Average Daily Flow Capacity of 174 million gallons per day. As of the date of this Agreement, the City owns 39.94% of the capacity of the Outfall and the balance of the capacity is owned by the IBWC.

V. Strength means the measurement of Suspended Solids (SS) and Chemical Oxygen Demand (COD) within the wastewater Flow and any other measurement required by law after the date of this Agreement.

W. "Suspended Solids" or "SS" means the insoluble solid matter in wastewater that is separable by laboratory filtration, as determined by the procedures specified in the most current edition of "Standard Methods for the Examination of Water and Wastewater," or any successor publication which establishes the industry standard.

X. Tertiary Component is that portion of the wastewater treatment process that currently filters the secondary treated wastewater effluent through fine sand and/or anthracite coal to remove fine Suspended Solids and disinfects it to meet the requirements of the California Administrative Code, Title 22, or its successor for filtered and disinfected wastewater.

Y. Water Repurification System includes the Advanced Water Treatment (AWT) Facility located at or near the North City Water Reclamation Plant site and the Repurified Water Conveyance System which will transport repurified water from the AWT Facility to the San Vicente Reservoir. The major processes of the AWT Facility include: ultra or micro filtration, reverse osmosis, and ozonation.

II. OWNERSHIP AND OPERATION OF THE METRO SYSTEM

A. Rights of the Parties.

The City is the owner of the Metro System, and of any additions to the Metro System or other facilities constructed pursuant to this Agreement. All decisions with respect to the planning, design, construction, operation and maintenance of the Metro System shall rest with the City, in consultation with the Metro Commission. The Participating Agencies shall have a contractual right to use the Metro System and to participate in its operation as set forth in

to the Participating Agencies. The City shall keep an updated version of Exhibit A on file with the City Clerk. Exhibit A may be amended to reflect other changes to the Metro System only as expressly provided in this Agreement.

C. Payment for Operation and Maintenance.

Through the system of charges set forth in Section V of this Agreement, each Participating Agency shall pay its share of the Operation and Maintenance Costs of all Metro System facilities. Provided however, that the Participating Agencies shall not pay for the Operation and Maintenance Costs of the Tertiary Component of the North City Water Reclamation Plant that can be allocated solely to the production of Repurified Water.

D. Charges Based on Flow and Strength.

A Participating Agency's share of the charges in this Section shall be assessed pursuant to Section V of this Agreement based on its proportionate Flow in the Metro System and the Strength of its wastewater.

E. Monitoring Flow and Strength.

1. The City shall monitor wastewater that is discharged into the Metro System for Flow and Strength. The City shall own and operate as part of the Metro System monitoring devices which will measure the amount of daily wastewater discharged into the Metro System. These devices shall be installed at locations appropriate to accurately monitor Flow and Strength. The City may also monitor wastewater Flow and Strength at other locations as it deems appropriate.

2. In measuring Strength, the frequency and nature of the monitoring shall not be more stringent for the Participating Agencies than it is for the City.

3. The City shall provide its plans for the monitoring system and for the procedures it will use to determine Strength to the Participating Agencies for review and comment prior to implementation.

4. The City shall report Flow and Strength data to the Participating Agencies at least quarterly.

EXHIBIT 24

THE CITY OF SAN DIEGO

S MWWDPROG

1998069299

October 26, 1998

Mr. Stephen A. Zapoticzny
Director, Environmental, Saftey & Health
Monsanto Company
8355 Aero Drive
San Diego, CA 92123

Dear Mr. Zapoticzny:

SUBJECT: Cost of Services Study for Municipal Wastewater Services

In response to your letter of September 29, 1998, the City is in the process of completing its Cost of Services Study for Municipal Wastewater Services. The preparation of the Study comes under the cognizance of the Financing Services Department. We have been informed that the draft study will be ready for review in January, 1999. It is the intent of the City to provide stakeholders the opportunity to review and comment on the draft study prior to its presentation to City Council.

I recommend that we wait until the draft report is published in January, 1999 prior to any discussions. However, if you would like to meet prior to that time, please feel free to contact either me at 533-4201 or Bill Hanley at 235-1957.

Sincerely,

for F.D. SCHLESINGER
Director

WZH:mr

cc: George Loveland, Deputy City Manager, MS 9A
Patricia Frazier, Deputy City Manager, MS 9B
Mary Vattimo, Financing Services Manager, MS 7B
Susan Hamilton
Bill Hanley
Clay Bingham
Hedy Griffiths

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EXHIBIT 25

CITY OF SAN DIEGO
SEWER COST-OF-SERVICE REPORT

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FINANCING SERVICES
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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY 1

II. INTRODUCTION 5
A. Purpose of Report 5
B. Scope and Content 5
C. Assumptions 5

III. STATE WATER RESOURCES CONTROL BOARD REVENUE PROGRAM GUIDELINES 7
A. General Requirements 7
B. Annual System Costs 8
C. Identification of Users 8
D. Procedures for Allocating Annual Revenue Requirements and Determining Rates 9
E. Other Considerations 11

IV. METROPOLITAN WASTEWATER SYSTEM ORGANIZATION AND OPERATION 13
A. The Wastewater System 13
B. General Operating Principles and Practices 15
C. Customer Information and Classifications 16
D. Current Sewer Rate Structure 16
E. Description of the Capital Improvement Program 17
F. Agreements With Participating Agencies 18

V. REVIEW OF EXPENSE AND REVENUE INFORMATION 20
A. Operation and Maintenance Cost Projections 20
B. Replacement Cost Projections 22
C. Debt Service Projections 23
D. Repurification 23

VI. ALLOCATION OF EXPENSES TO COST-CAUSATIVE COMPONENTS 24
A. O M & R and Capital Cost Allocations to Cost Centers 24
B. Cost Center Expense Allocations to Treatment Parameters 25

VII. ALLOCATION OF EXPENSES TO CUSTOMER CLASSES 26
A. Review of Flow and Load Allocation Information 26
B. Distribution of System Loadings to City and Participating Agencies 27
C. Distribution of System Loadings to Customer Classes Within The City 27
D. Unit Costs for Flow, COD, and SS 29
E. Total Annual Cost Allocations for Flow, COD, and SS 29

VIII. PROJECTED ANNUAL REVENUES FROM SERVICE CHARGES 30
A. Introduction 30
B. Participating Agency Service Charges 30
C. Trucked Waste Service Charges 30
D. City Service Charge Revenues 31
E. Capacity Fees 33

IX. COMPARISON OF 1998 SBB RATES 36

CITY OF SAN DIEGO
SEWER COST-OF- SERVICE REPORT

I. EXECUTIVE SUMMARY

Purpose of the Report.

The purpose of this report is to determine the costs of providing wastewater collection, conveyance, and treatment services to the City of San Diego and the Participating Agencies outside the City and to establish rates based on those costs. Operation, maintenance, and replacement (OM&R) costs, debt service costs, and costs for planned capital improvements were allocated to the cost-causative components of the wastewater system and were divided by the total plant loadings to determine unit costs for flow, suspended solids (SS), and chemical oxygen demand (COD). The contribution of each user or user class was then multiplied by the unit cost for each parameter to establish a sewer rate in proportion to the user's demand on the system. The procedure used in preparing this report meets with the requirements of the State Water Resources Control Board (SWRCB). Cost information from this report will be used to prepare the Wastewater System Revenue Program that must be submitted to the SWRCB for approval.

City's Current Billing System and Changes to be Made.

The City's current system bills sewer customers within the City based on their flow and suspended solids contributions to the system. However, the organic strength of the sewage is not factored into sewer bills for City customers. Participating Agencies in the Metropolitan sewer system are billed on the basis of flow, suspended solids, and organic strength. The costs of providing wastewater collection, conveyance, and treatment services to the City of San Diego and the Participating Agencies in total based upon flow, suspended solids, and organic strength are determined so that all of the entities pay their "fair and equitable" share for collection, treatment, and disposal/reuse of the total wastewater flow, including suspended solids content and organic strength loading.

Changes are made so that costs are allocated within the City to individual customer classes so that the revenue generated by each user class is in proportion to the customer's demand on the system. Annual revenue requirements for the Metro wastewater system and the City's Municipal (Muni) wastewater system through 2003 were provided by the City for use in determining rates that would be charged to users that reflect their contributions to flow, suspended solids and organic strength.

The report includes the:

- Executive Summary,
- Introduction,
- Summary of the SWRCB requirements for revenue programs including the procedures to be used in developing a revenue program,
- A description of the wastewater system that serves the City of San Diego and the Participating Agencies (see subsection IV.F for the definition of Participating Agencies) and the organizational structure of the department that oversees the operation of the sewer

system. Information is presented on current sewer system customers and classifications, the capital improvement program for the system, and a summary of the service agreements between the City and Participating Agencies,

- OM&R and debt service costs are projected based on current operations and planned system improvements,
- Expenses are allocated to the cost-causative components, resulting in unit costs for the treatment parameters of flow, SS, and COD. The unit costs are allocated to individual customers or customer classes based on the relative contribution of each customer to the system.

SWRCB.

The SWRCB developed Revenue Program Guidelines to assist local governments and public agencies in preparing, implementing, and maintaining revenue programs that comply with Section 204(b)(1) of the Federal Clean Water Act, Federal and State Regulations and Policies of the State Water Resources Control Board (SWRCB). These Guidelines apply to all recipients of wastewater system grants and loans from the U.S. Environmental Protection Agency (EPA) and the SWRCB.

The City of San Diego, as a previous recipient of EPA Construction Grant Program moneys, is required to comply with Appendix B of 40, Part 35, Subpart E of the Federal Regulations. Adopting a user charge system based on strength-based billing is not only a condition for retention of previously awarded grant funds under the EPA program, but it is a requirement for future funding under California's State Revolving Fund for Construction of Wastewater Treatment Facilities. MWWD is presently pursuing low/no interest loans under the state revolving fund program.

The Wastewater System.

The Wastewater System consists of the Municipal (Muni) System, which is a municipal sewage collection system for the City's residents, and the Metropolitan (Metro) System, which is a regional sewage collection, treatment and disposal system initiated in 1958 (and operational since 1963) to serve the City and various other public agencies including cities situated within common drainage areas. The Metro System was designed to provide sufficient capacity to accommodate a regional population of 2,600,000. The City, as owner and operator of the Metro System, is the holder of the National Pollutant Discharge Elimination System (NPDES) permit and is responsible for maintaining the discharge requirements required under Federal law.

The Metropolitan Wastewater Department (MWWD) manages the Metro system and assumed responsibility for the Muni system on July 1, 1996. The wastewater system is operated with funds derived primarily from sewer service charges. All system revenues are deposited in the Sewer Revenue Fund, which is used to finance operation, maintenance, replacement, and capital improvements in both the Metro and Muni systems. As an enterprise fund, the Sewer Revenue Fund is held separate and apart from other funds of the City.

Wastewater generated by the Participating Agencies (see subsection IV.F for the definition of Participating Agencies) is metered as it enters the Metro system and charges for treatment are based

on flow, SS, and COD. Within the City, wastewater flows from individual locations are not measured and metered water consumption is used to approximate each customer's sewage flow.

The Metro system serves the City of San Diego and fourteen Participating Agencies located outside the City. Within the City, sewer customers are grouped into the following four major classifications:

Description	Total Customers (Connections)
Single family dwelling	198,979
Other domestic (multiple living units)	29,340
Commercial	19,146
Industrial	596

OM&R Costs and Allocation Methodology.

The wastewater system OM&R cost information was collected from City and MWWD financial reports. This information was summarized and allocated to the cost centers. The three operating cost centers are (1) Municipal System ("Muni"), Fund 41506, (2) Metro Projects ("Metro"), Fund 41508, and (3) Metropolitan Wastewater Plan ("Metro" or "Metro New Construction"), Fund 41509. Within each fund are a number of departments. The total OM&R costs for each department were determined so the costs could be allocated to the different treatment parameters.

Capacity Fees.

Capacity fees are imposed on developers of real property as a means of recovering all or part of the cost of constructing plants or other facilities necessitated by growth. Capacity fees are not to be confused with connection fees, which are charges for time and materials necessary to connect property to the system. Three levels of capacity fees are described and modeled in this report:

1. No capacity fee. All costs and expenditures would be recovered via monthly service charges and other charges such connection fees.

2. A full cost recovery fee. All cost of expansion would be borne by new development.

3. A fee set in between the two. This is the current method adopted by the City of San Diego.

The City currently imposes a capacity fee which only partially funds expansion of wastewater facilities necessitated by new development. In most cases, the fee is $2,500 per EDU of capacity required. Under certain circumstances, a reduced fee of $1,500 per EDU is charged.

A full cost recovery capacity fee would be computed by dividing the total cost of facility expansion by the units of new capacity created. The expansion program that began in 1988 will increase capacity from 219 million gallons per day to 277 million gallons per day in 2003; an increase of 58 million gallons per day. The cost of the expansion is $913.8 million in 1998 dollars. Expansion capacity is designed on the basis of 280 gallons per day per EDU. The fee is determined as follows:

The cost per unit of capacity would be $913,841,000/58,000,000 = $15.76 per gallon per day.

The single family capacity fee in 1998 would be $4,412 ($15.76 * 280) and this is the EDU. Other land uses would be related to the single family based on EDUs.

Capacity fees are collected on a pay-as-you-go basis which means that the funds needed for adding plant capacity are received over a period of years as development occurs. To construct capacity so it is available when needed, the City must borrow the necessary funds. Therefore, the capacity fee should be increased each year for increased construction and financing costs.

Strength Based Billing Rates for Fiscal Year 1998.

Monthly sewer bills for different types of customers within the City based on 1997 and 1998 rates under the City's current system are compared to the strength-based billing (SBB) rates for 1998 determined in this report. The 1998 SBB rates include charges for flow, SS, and COD, but do not include a base fee or a sewer cap based on winter water use. The SBB rate is a straight calculation using the flow, SS, and COD contributed by each customer times the respective unit cost for each parameter.

Table I-1 shows that SBB will increase sewer charges for commercial and industrial customers compared to the current system in which bills are based only on flow and SS. The largest rate increases will be experienced by customers that contribute significant amounts of COD to the system. In contrast, sewer bills for single family customers will generally decrease when the SBB system is instituted. Single family customers who use less than the average amount of water (14 HCF per month) will pay less than their current sewer bills. For example, a single family customer using 10 HCF per month would pay 44 percent less with SBB in 1998 than it would based on projected existing 1998 rates. At the same time, single family customers who use more than the average amount of water will get higher sewer bills with SBB.

Table I-2 shows the differences in SBB bills under the three different Capacity Fee alternatives. If the Capacity Fee is reduced from the current fee to no fee, the rates are increased by approximately 3.4%, and if the Capacity Fee is increased under a full cost recovery method, the rates decrease by approximately 3.1%.

II. INTRODUCTION

A. Purpose of Report

This sewer cost-of-service report was prepared to determine the costs of providing wastewater collection, conveyance, and treatment services to the City of San Diego and the Participating Agencies outside the City. Operation, maintenance, and replacement (OM&R) costs, debt service costs, and costs for planned capital improvements were allocated to the cost-causative components of the wastewater system and were divided by the total plant loadings to determine unit costs for flow, suspended solids (SS), and chemical oxygen demand (COD). The contribution of each user or user class was then multiplied by the unit cost for each parameter to establish a sewer rate in proportion to the user's demand on the system. The procedure used in preparing this report meets with the requirements of the State Water Resources Control Board (SWRCB). Cost information from this report will be used to prepare the Wastewater System Revenue Program that must be submitted to the SWRCB for approval.

B. Scope and Content

This report allocates costs between the individual Participating Agencies and the City of San Diego so that all of the entities pay their "fair and equitable" share for collection, treatment, and disposal/reuse of the total wastewater flow, including suspended solids content and organic loading. Costs are further allocated within the City to individual customer classes so that the revenue generated by each user class is in proportion to the user's demand on the system.

The report includes an Executive Summary, Introduction, and five other main sections. Section III summarizes SWRCB requirements for revenue programs, including the procedures to be used in developing a revenue program. Section IV describes the wastewater system that serves the City of San Diego and the Participating Agencies and the organizational structure of the department that oversees the operation of the sewer system. The section also includes information on current sewer system customers and classifications, describes the capital improvement program for the system, and summarizes the service agreements between the City and Participating Agencies. Section V presents OM&R and debt service cost projections based on current operations and planned system improvements, while Section VI allocates these expenses to the cost-causative components resulting in unit costs for the various treatment parameters. In Section VII, the unit costs are allocated to individual customers or customer classes based on the relative contribution of each customer to the system. The Appendices and Exhibits referred to in Volume I of this Report can be found in Volume II.

C. Assumptions

The primary assumptions used in preparing this report are as follows:

1. Annual revenue requirements for the Metro and Muni systems are based on historical cost information and cost projections developed by the Metropolitan Wastewater Department (MWWD) and the City's Financing Services Division. The City's Financing Services Division includes an annual

inflation rate for expenditures of three percent for Fiscal Years 1998 through 2000 and four percent for Fiscal Years 2001 through 2003.

2. Wastewater flow and load projections for the Metro system are based on an October 7, 1996, memorandum titled Wastewater Flow and Load Projections - 1997 Financial Plan, as prepared by the MWWD Technical Services Division.

3. Baseline sampling data from June 1995 through December 1996 was used to determine the chemical oxygen demand (COD) and suspended solids (SS) loadings produced by the individual Participating Agencies and the City as a whole. Flow weighted COD and SS concentrations were used to calculate the total pounds contributed by each entity.

4. COD was measured at sampling sites within the Metro system. The flow weighted average COD concentration for the City was higher than the average concentration for the Participating Agencies.

5. Operation, maintenance, replacement, and capital costs for the Metro system were allocated to the three treatment parameters of flow, COD, and SS using the functional-design approach developed for the MWWD by Montgomery-Watson in June 1996. The same functional-design approach was used to allocate Muni system costs to flow, COD, and SS.

6. The Muni and Metro system capital improvement projects are financed by both debt and pay-as-you-go funding. The amount of debt financing varies each year to accommodate cost needs and financing constraints. The amount of debt outstanding at any one time on the sewer system is limited to no more than 80 percent of the capitalized plant value.

7. Expansion-related capital improvement projects are partially funded by capacity fees.

III. STATE WATER RESOURCES CONTROL BOARD REVENUE PROGRAM GUIDELINES

This section of the report presents the guidelines and requirements ("Guidelines") set forth by the State Water Resources Control Board (SWRCB) for sewer system revenue programs.

A. General Requirements

The Revenue Program Guidelines were developed to assist local governments and public agencies (municipalities) in preparing, implementing, and maintaining revenue programs that comply with Section 204(b)(1) of the Federal Clean Water Act, Federal and State Regulations and Policies of the State Water Resources Control Board (SWRCB). These guidelines apply to all recipients of wastewater system grants and loans from the U.S. Environmental Protection Agency (EPA) and the SWRCB.

The City of San Diego, as a previous recipient of EPA Construction Grant Program moneys, is required to comply with Appendix B of 40, Part 35, Subpart E of the Federal Regulations. Paragraph f(1) of Appendix B states:

> The user charge system must result in the distribution of the cost of operation and maintenance of treatment works within the grantee's jurisdiction to each user (or user class) in proportion to such user's contribution to the total wastewater loading of the treatment works. Factors such as strength, volume, and delivery flow rate characteristics shall be considered and included as the basis for the user's contribution to ensure a proportional distribution of operation and maintenance costs to each user (or user class).

Adopting a user charge system based on strength-based billing is not only a condition for retention of previously awarded grant funds under the EPA program, but it is a requirement for future funding under California's State Revolving Fund for Construction of Wastewater Treatment Facilities.

A revenue program is a formally documented user charge system that is developed by the municipality. A user charge system is designed to provide a revenue source for wastewater system operation, maintenance, and replacement (OM&R) costs that satisfies federal and state requirements. Rates under a user charge system are set based on the number and type of identified users and their respective contributions to the wastewater loading of the treatment works.

In contrast, a service charge system includes the user charge OM&R costs, plus additional charges, if appropriate for the local agency, to cover capital related payments such as debt service costs and contributions to capital reserve accounts. A system of service charges is developed by estimating the municipality's annual revenue requirements for the total wastewater system OM&R, including those portions not grant or loan funded. Debt service, as well as revenue for capital reserve and operating reserve funds, may also be collected by the system of charges based on actual use or, if approved, by ad valorem taxes. The SWRCB recommends that funds for the cost of debt service, capital improvements, etc. also be collected in proportion to the costs of service rendered.

B. Annual System Costs

Annual system costs for a wastewater system include OM&R costs and, in most cases, capital costs such as pay-as-you-go capital costs, debt service, and contributions to capital reserve accounts. Municipalities may also establish an operating reserve fund to ensure proper operation of the treatment works.

OM&R expenditures include the costs for labor, power, chemicals, supplies, laboratory control and monitoring, general administration, billing, and other miscellaneous expenses incurred during normal system operation. This category also includes expenses for ordinary repairs that are needed to keep the treatment works in proper operating condition, administrative costs such as overhead and accounting which are directly related to the OM&R of the system, and replacement costs as defined below. An estimate of future OM&R costs should be made by adjusting the most recent operating cost data to reflect projected operational modifications, wage increases, or staffing changes.

Replacement costs as defined by the SWRCB include all expenditures required for a facility to operate for its design life. This includes costs for items such as pumps, motors, electrical controls, telemetry equipment, air scrubbing equipment, chlorination equipment, dechlorination equipment, vehicles, radios, and other components which require periodic replacement. However, replacement costs do not include capital costs for major upgrades of individual process units, structural rehabilitation of existing facilities, expenses for plant expansions that are undertaken to meet future user demands, or costs to upgrade the treatment process. Replacement costs may be based on a minimum five-year planning cycle, and the annual replacement cost to be included in the user charge must be recalculated each year. In lieu of the five-year replacement plan, the municipality may deposit an amount in the replacement fund equal to the sum of the straight line depreciation of the replacement items based on their current costs, but excluding related structural facilities such as buildings, pipes, etc.

Debt service is the annual sum of the principal and interest payments on proposed or outstanding obligations that are secured by bonds or loan contracts. Although it is not required, municipalities are encouraged to establish an operating reserve fund to ensure proper operation of the treatment works. This fund is intended to satisfy costs associated with unexpected price increases, additional chemical or power usage, and other such items, but does not include costs for replacement of equipment. According to the SWRCB, wastewater agencies in California normally operate with reserves of between 10 and 50 percent of annual revenue requirements.

C. Identification of Users

After the annual costs of the wastewater system are determined, the users of the treatment works and their associated wastewater flows and loadings must be identified. Flows and loadings must be documented for residential, commercial, institutional, and industrial user groups. Individual cost allocations do not have to be made for various types of residential users, but dividing residential users into single family, multiple family, or mobile home subgroups will allow more refined cost allocations to be made. Commercial and industrial users may need to be divided into appropriate subgroups that reflect the great variability in wastewater flow rates and strengths. Commercial or industrial users that

discharge more than 25,000 gallons per day (gpd) to the system must also have their costs allocated individually. Similar to the commercial and industrial groups, costs must be allocated to individual institutional users or user groups such as hospitals, correctional facilities, schools, and colleges. The City of San Diego's user groupings and cost allocations comply with these requirements.

Any outside municipality that discharges to the treatment works must be listed as a separate user group. Additionally, if septage (septic tank discharge) is received by the treatment works, this category must also be listed as a user group with corresponding flows and loadings. The charges established for septage must be based on its contributing loadings. Generally, a 1,000 gallon dump from residential septic tanks contains 5,400 milligrams per liter (mg/L), or 45 pounds, of five-day biochemical oxygen demand (BOD), and 12,000 mg/L, or 100 pounds, of suspended solids (SS). Other types of septage from commercial and industrial sources must be sampled at the discharger's expense to prevent unacceptable discharges and to allow a proper charge to be calculated.

D. Procedures for Allocating Annual Revenue Requirements and Determining Rates

Allocating annual costs to the system users is a three-step process. The initial step is to allocate the cost among the treatment parameters in proportion to the percentage of costs that the flow, BOD_5, SS, and other components represent. The City of San Diego has requested in writing a variance to use COD rather than BOD. A written response was received on November 6, 1997 granting the variance. The second step is to divide the allocated costs by either total plant loadings or total design loadings to determine unit costs for each treatment parameter. The final step is to multiply each user's contribution to the system by the unit costs for each parameter to establish a sewer rate in proportion to the user's demand on the system.

OM&R costs for the treatment works must be recovered from system users through a user charge system that is based either on actual use or through a pre-approved ad valorem tax system. User charges must recover OM&R costs from users based on their proportionate contribution to the total wastewater loading from all system users. However, the total OM&R budget may be offset by income derived from the operation of the treatment works. This type of income can result from the sale of used equipment, sewage sludge, digester gas, reclaimed wastewater, treatment plant residues, or power generated from plant by-products. Investment income from assets of the wastewater enterprise is also considered operating income if the assets were originally funded with income generated from user charges.

If desired, a municipality may adopt reduced or less than proportionate share rates for low income residential users. A low income user is defined as any user whose income level is below the poverty rate established within the municipality's service area. If used, the reduced service charge must be based on an economic consideration only and may not be applied only to a subgroup under the poverty level, such as senior citizens. If a municipality decides to adopt a low income discount, a number of rules apply. First, the discount rate selected will apply to all users who qualify for the discount. Second, eligibility for the discount must be verified on an annual basis. Finally, all revenues that are lost because of the discount must be recovered from other system users through increased service charges. A notice that informs the public about the low income discount must also be published in a newspaper of general circulation within the municipality's service area. Under the

Guidelines, any pre-existing agreements which levy OM&R charges that are different than the proportional use rates calculated by the revenue program will not be allowed to continue, and the charges must be revised to reflect the approved rates. The user charge system shall take precedence over any terms or conditions contained in agreements or contracts that the municipality may be a party to that are inconsistent with the requirements of the SWRCB Guidelines. If there are any pre-existing contracts or agreements that are inconsistent with the Guidelines, the municipality must notify the SWRCB at the time the revenue program is submitted for review.

In the Guidelines, the SWRCB recommends that funds for the cost of debt service, capital improvements, etc. be collected with the OM&R user charge in proportion to the cost of the service rendered. A municipality may meet these revenue requirements through service charges, ad valorem taxes, standby charges, or assessments. If debt service and capital improvement costs are collected through service charges, and the municipality does not wish to recover these costs in proportion to system use, then a public notice describing the impacts of the proposed rate structure is required. An opportunity for public comment prior to final adoption of the rate ordinance must be given. Notice of the proposed rate shall be given by direct mailing to all organizations and individuals who have previously requested such notice, as well as to all system users who would be adversely affected by the change in rates.

Allocation of OM&R costs based on flow only can be made if the system serves less than 10,000 people, has no industrial users, and does not receive septage. A flow only OM&R cost allocation can also be used where the residential design flow for the treatment works exceeds 95 percent of the total design flow and there are no industrial or septage flows.

A municipality's user charge system based on ad valorem (A/V) taxes may be approved if the municipality had a system of dedicated A/V taxes in existence on December 27, 1977 and has continued to use that system to collect revenues to pay OM&R costs for wastewater treatment works within its service area. The A/V user charge system must distribute OM&R costs for all treatment works within the municipality's service area to the residential and small non-residential user classes including, at the municipality's option, other users that are not required to have their costs allocated individually. Each industrial and commercial user that discharges more than 25,000 gpd or more than 5 percent of the plant's design flow must pay its share of OM&R costs for the treatment works based on charges for actual use. Finally, a system of surcharges and rebates must be instituted to ensure that all users and user groups pay their proportionate share of the OM&R costs.

OM&R costs for all infiltration and inflow (I/I) that is not directly attributable to users must be distributed among all users in the same manner that it distributes the costs for their actual use. Alternatively, I/I costs can be distributed under a system that uses one or any combination of the following factors on a reasonable basis: flow volume of the users, land area of the users, number of hookups or discharges of the users, and property valuation of the users (if A/V taxes are used).

The Guidelines state that administrative costs for the wastewater system may be included in the OM&R cost allocation, or they may be separated and allocated on another equitable basis such as the number of sewer accounts.

E. Other Considerations

The California Administrative Code prescribes a uniform system of accounts for wastewater disposal systems. Municipalities that are not subject to the uniform system of accounts must establish accounting systems for wastewater conveyance, treatment, and disposal that will provide essentially the same level of detail as the uniform system. Wastewater activities shall be accounted for in an enterprise fund which will consist of at least two revenue and three expense accounts. Revenue accounts include a service charge revenue account and a capital revenue account. Funds from the service charge revenue account can be used for any wastewater-related activity. However, funds from the capital revenue account may only be used for facility expansion, upgrade, or major rehabilitation. OM&R costs may not be funded from the capital revenue account. Expense accounts include an operation and maintenance account, a replacement account, and a capital expenditures account. The first two accounts must be funded from the service charge revenue account. Either revenue account can be used to fund the capital expenditures account. The replacement account should not include money set aside for unexpected price increases. Funds for this purpose should be accumulated in an operating reserve fund. The City's system of accounts, while different from the uniform system of accounts described by the California Administrative Code, provides essentially the same level of detail as the uniform system.

Connection fees can be used to recover debt service costs which would have been recovered on an annual basis if the user had been connected when the treatment works began operation. This fee may not be used to recover excessive costs from future users of treatment works in order to reduce charges to current users. Connection fees may not be used to fund replacement costs (as defined by the SWRCB).

If a municipality charges a flat rate for some users and a variable rate based on water consumption for others, a minimum charge may be established for the variable rate users to collect the fixed costs of providing service. This charge must not be more than the minimum charged to any user group which is charged a flat rate. The same minimum charge must be applied to all user groups which have a minimum charge, unless it can be shown that fixed costs vary significantly.

When treatment works serve more than one municipality, the user charge system outlined in the revenue program must cover all wastewater treatment services provided, and each participating municipality must adopt its own user charge system and rate ordinance or resolution. If the regional municipality is authorized to bill all of the individual users of the system, only one revenue program and rate ordinance is required. If the regional municipality bills a subscribing municipality, which in turn bills the individual users, separate revenue programs and rate ordinances are required for the regional municipality and each subscribing municipality. The regional municipality's charges to a subscribing municipality must be based on actual usage and include the fixed cost of reserved capacity, if capacity is reserved for specific subscribing municipalities.

In 1973, the SWRCB adopted guidelines for administering the "Fair and Equitable" clause contained in Clean Water Grant contracts. The intent of this clause is to protect municipalities that are required to join regional systems, as a result of State Board planning decisions, from undue financial burdens or inequitable treatment by the regional agencies. The guidelines focus on two areas of concern: the

costs assessed to participating agencies, and the appropriateness of conditions imposed by the regional agency. In determining reasonable costs and charges to a participating agency, consideration should be given to the amount of flow, the strength of waste, and any special waste characteristics. Costs for treatment, including both OM&R costs and capital costs, must be apportioned among the users in direct proportion to the actual or allocated use. Costs of conveyance may be assigned directly to a participating agency in direct proportion to use if it is geographically separate or has other distinct and discrete characteristics. Otherwise, all conveyance costs shall be considered a basic part of the regional facilities, shall be combined with treatment costs, and will be apportioned in the same manner as are treatment costs. Costs that exceed the actual costs incurred by the regional agency and which, in effect, penalize participating agencies are improper and are not considered fair and equitable.

IV. METROPOLITAN WASTEWATER SYSTEM ORGANIZATION AND OPERATION

A. The Wastewater System

The Wastewater System that is the subject of this cost-of-service study consists of the Municipal (Muni) System, which is a municipal sewage collection system for the City's residents, and the Metropolitan (Metro) System, which is a regional sewage collection, treatment and disposal system initiated in 1958 (and operational since 1963) to serve the City and various other public agencies including cities situated within common drainage areas. The Metro System was designed to provide sufficient capacity to accommodate a regional population of 2,600,000. The City, as owner and operator of the Metro System, is the holder of the National Pollutant Discharge Elimination System (NPDES) permit and is responsible for maintaining the discharge requirements required under Federal law. The Metro System, as presently designed, provides advanced primary treatment of sewage at its Point Loma Wastewater Treatment Plant.

The map included as Exhibit IV-1 shows the sewer service area boundaries of the wastewater system which covers approximately 450 square miles, including most of the City.

1. **Muni System Facilities.** The Muni System is comprised of 2,528 miles of trunk and collector mains, 82 sewer pump stations and 14 stormwater interceptor pump stations serving in excess of 240,000 customer accounts. On average, these accounts generate 128 million gallons per day (mgd) of wastewater which is conveyed by the Muni system to the Metro system for treatment and disposal. The Wastewater System Capital Improvement Program (CIP) contemplates expenditures of $360.1 million for Muni system facilities during the seven Fiscal Years ending June 30, 2003.

2. **Metro System Facilities.** The current Metro System infrastructure, with the exception of the South Metro interceptor, is located within the jurisdictional boundaries of the City and is concentrated along a kidney shaped corridor running from Mission Bay to the north and along the perimeter of the San Diego Bay to the south. The map included as Exhibit IV-1 shows the geographic concentration of the Metro System's infrastructure and identifies the major interceptor lines north and south which service the Participating Agencies.

The Metro System's infrastructure consists of one main wastewater treatment plant, an ocean outfall, a sludge drying facility, two pump stations, and force mains and gravity flow interceptors. A brief description of the current facilities and their primary functions is provided below.

a. **Point Loma Wastewater Treatment Plant.** The wastewater treatment process currently employed at the Point Loma Plant consists of advanced primary treatment currently rated at 240 mgd of average daily wastewater flow and includes mechanical screening, by which raw wastewater flows into the Point Loma Plant through five 15 millimeter mesh mechanically self-cleaning traveling screens, the addition of chemical coagulants to enhance settling to achieve at least 80 percent removal of suspended solids, sedimentation, and sludge digestion. A digester gas utilization facility is also a part of the Point Loma Plant. Dewatering and disposal and/or reuse of sludge are provided off site.

Several capital improvement projects have been completed at the Point Loma Plant to rehabilitate, modify, and expand various components, and additional capital improvements are planned. Ongoing capital improvements include construction of two new sedimentation basins for a total of twelve basins, completion of a new effluent channel to all of the sedimentation basins, repair and modernization of two of the six digesters, construction of a new sludge pumping station, a new water tank, two additional digesters, automation of process control facilities, and restoration of the ocean outfall intake structure. Projects under design include upgrade of the headworks, odor control and grit removal facilities, modernization of two existing digesters, a new operations building, expansion of the gas utilization facility, a central boiler facility, and expansion of the maintenance building.

b. **Point Loma Plant Ocean Outfall.** The Point Loma Plant Ocean Outfall was constructed in 1963 to provide a method for disposal of all plant effluent. The original capacity of the 11,316-foot long, 108-inch diameter outfall has been estimated at 390 mgd under the original design configuration. The City commenced construction in 1992 of a 12,500-foot extension of the original outfall. The Point Loma Plant Ocean Outfall Extension was completed in November 1993 resulting in a 4.5 mile long outfall discharging treated sewage effluent at a depth of 320 feet of water. It is one of the longest, deepest ocean outfalls in the United States. The capacity of the ocean outfall in its current configuration is estimated to be at least 432 mgd.

c. **Fiesta Island Sludge Drying Facilities; Metro Biosolids Center.** A portion of Fiesta Island, located in Mission Bay, is currently used by the City for mechanical dewatering and air drying of sewage sludge. Since 1963, digested liquid sludge at three percent solids has been pumped from the Point Loma Plant through an eight mile pipeline to Fiesta Island. At the facility, mechanical belt filter presses provide initial dewatering functions. Solar energy dries the sludge cake in open sand drying beds. When the sludge solids content reaches 50 percent, the dried sludge is transported off-site for either beneficial use or landfill disposal. The California Coastal Commission has directed that the City vacate its sludge drying facilities at Fiesta Island since the use of the island for sludge processing has been determined to be incompatible with its intended recreational use and the commission is imposing mitigation charges on the City until the facilities are vacated. The charges were $2 million per year for 1993 and 1994. The commission reduced the charge to $1.5 million per year as a result of the progress that has been made constructing the replacement facilities described below. These charges have been paid from Wastewater System Revenues to the City's Department of Parks and Recreation. The City plans to cease its sludge operations at the Fiesta Island facility in February 1998.

The City will complete the construction of replacement facilities in 1997 of the Metro Biosolids Center on a site at Miramar Marine Corps Air Station. The overall capital budget for the replacement facilities to be located at the Miramar site is expected to be approximately $238 million.

The Metro Biosolids Center will perform the following two primary functions. It will digest biosolids generated at the North City Water Reclamation Plant, and it will mechanically dewater biosolids from the North City Plant and the Point Loma Wastewater Treatment Plant. The Metro Biosolids Center will replace dewatering operations currently located on Fiesta Island which service the Point Loma Plant. A for-profit enterprise is operating a cogeneration facility at the site. A sludge drying facility is also proposed to be located at the Metro Biosolids Center. The sludge drying facility may be

undertaken by a for-profit enterprise to produce agricultural fertilizer pellets. Other beneficial use options such as composting and direct land application are being considered along with landfill disposal.

d. Pump Stations. The two Metro pump stations began operation in 1963. The pumping facilities are reported to be in good condition, and all structures, including wet wells, are expected to last at least another 25 years. No major modifications or improvements are anticipated except for installation of additional new pumps and motors and the overhaul of existing pumps and motors as needed.

e. Metro Interceptors. The Metro System interceptors consist of two major branches, the South and North, which meet at Pump Station No. 2. Interceptor capacities are normally adequate for current peak flow, but in the near future some interceptor sections may be subject to peak flows that exceed design capacities. Under the Wastewater System Capital Improvement Program, it is contemplated that expenditures of $35.7 million remain to be made for interceptors during the period ending June 30, 2003. Construction projects are currently underway to address these future capacity needs.

3. Additional Contractual Capacity Through the Escondido Wastewater Treatment Plant. In addition to the Metro System facilities described above, in 1972 the City entered into a sewage disposal agreement with the City of Escondido, whereby up to five mgd of sewage from the Rancho Bernardo sewer service area of the City of San Diego may be treated at Escondido's Hale Avenue Treatment Plant. The term of the agreement is 50 years and may be extended for an unlimited number of ten-year periods at the City's option. The Escondido Wastewater Treatment Plant is not owned by the City of San Diego and is not part of the Metro System.

B. General Operating Principles and Practices

The MWWD manages the Metro system and the Muni system. The wastewater system is operated with funds derived primarily from sewer service charges. All system revenues are deposited in the Sewer Revenue Fund, which is used to finance operation, maintenance, replacement, and capital improvements in both the Metro and Muni systems. As an enterprise fund, the Sewer Revenue Fund is held separate and apart from other funds of the City.

Wastewater generated by the Participating Agencies is metered as it enters the Metro system and charges for treatment are based on the measured flow, SS, and COD. Within the City, wastewater flows from individual locations are not measured, and metered water consumption is used to approximate each customer's sewage flow.

C. Customer Information and Classifications

The Metro system serves the City of San Diego and fourteen Participating Agencies located outside the City. Within the City, sewer customers are grouped into the following four major classifications:

Description	Rate Codes	Total Customers (Connections)
Single family dwelling	11 to 15	198,979
Other domestic (multiple living units)	21 to 25	29,340
Commercial	31 to 35	19,146
Industrial	41 to 45	596

Exhibit IV-2 provides descriptions for all of the rate codes currently used by the City for billing purposes. Customers with rate codes ending in "4" or "5" do not return any flow to the sewer system. Rate codes ending with "4" designate customers that are served by septic tanks or other on-lot sewage disposal systems. Rate codes ending with a "5" identify customer locations that have separate irrigation meters. Rate codes 51 through 97 designate customers located outside the City, fire sprinkler service, backflow meter locations, and temporary water meters for construction projects. Customers with these rate codes also do not return any flow to the sewer system.

D. Current Sewer Rate Structure

Participating Agencies located outside the City are currently billed for sewage conveyance, treatment, and disposal services. Customers within the City of San Diego are billed based on both the volume and suspended solids (SS) content of the wastewater generated. However, no charge is currently made for the organic content of the wastewater.

Sewer bills for single family dwellings in the Muni service area are based on winter month water usage and a SS concentration of 277 milligrams per liter (mg/L). Previous analyses have determined that winter month water consumption (December through March) in single family dwellings approximates the water used inside the dwelling unit on an average annual basis. Wastewater returned to the sewer system from single family residences is estimated to be 90 percent of winter month water use. Sewer bills for multiple living units are calculated using actual metered water usage and a 277 mg/L concentration for SS. The total calculated sewer bill is then reduced by five percent to reflect a 95 percent return to sewer for this user class. Water and sewer rates for the City of San Diego, as of January 1, 1997, are summarized in Exhibit IV-3. This rate schedule includes a six percent increase in sewer rates which became effective on October 1, 1996. An additional six percent increase in sewer rates became effective on July 1, 1997.

Sewer bills for non-residential customers are calculated using a separate rate schedule. A Sewer Classification Program was implemented in 1988 to determine the amount and strength of sewage discharges from commercial and industrial customers within the City. Amount refers to the percent of metered water that is discharged into the sewer system while strength refers to the SS (suspended solids) concentration of the wastewater. Similar customers were placed into categories and were assigned characteristic SS concentrations based on the type of business activity. The first ten SS

classes range from 0 to 1,000 mg/L, in 100 mg/L increments. An eleventh class also exists for dischargers with SS concentrations in excess of 1,000 mg/L.

In addition to the classifications for SS, field inspections were conducted at various customer locations to determine what type of establishment a water meter is serving and how the water is used. This included gathering data on irrigation usage, cooling tower evaporation, water used in the product produced, and other similar information. This information was used in conjunction with the water consumption history of the customers to calculate the percent of total water use that is returned to the sewer system. There are a total of 20 return-to-sewer components in the current rate schedule for commercial and industrial accounts. The first 19 classes range from 5 to 99 percent return to sewer, in four percent increments. The twentieth class is for customers whose return to sewer is equal to the metered water use.

The current sewer rate schedule for commercial and industrial accounts is shown in Exhibit IV-4. Sewer Quality Codes (SQC) were developed to express both the SS concentration and percent return to sewer for non-residential customers. Classes A through K and L through V refer to the SS classes for commercial and industrial customers, respectively, while the 01 through 20 designation describes the percent return to sewer. For example, a SQC of A02 identifies a commercial customer that returns between 90 and 94 percent of metered water use to the sewer at a SS concentration between 0 and 100 mg/L. A SQC of L02 identifies an industrial customer with the same discharge characteristics. Bills for customers with a SS concentration in excess of 1,000 mg/L are computed based on 100 percent return to the sewer.

E. Description of the Capital Improvement Program

The Wastewater System Capital Improvement Program (CIP) consists of projects to upgrade both the Metro and Muni systems. Metro CIP projects include the following:

Metro Biosolids Processing Projects
North City Water Reclamation Plant
Point Loma Plant Upgrade
Point Loma Outfall Upgrade
South Bay Water Reclamation Plant
South Bay Sewer Conveyance System
South Bay Ocean Outfall
North and South Metro Interceptor Sewer Upgrades
Other Metro System Projects

Muni System CIP projects generally include replacement of deteriorated sewer lines, rehabilitation of existing sewage pumping stations, and construction of new interceptor lines and pump stations.

The Wastewater System CIP will be funded by a combination of system revenues and debt financing. The projected source of funds for the capital improvement projects for Fiscal Years ending June 30, 1997, to June 30, 2003, include:

- New Bond Issues
- Grant Receipts
- Contributions in Aid
- Pay-As-You-Go Moneys
- State Revolving Fund Loans[1]

As part of this cost-of-service study, six estimates of CIP cost projections were reviewed to evaluate the reasonableness of the cost projections and the soundness of the estimating methodology. The projects were chosen randomly and included both Metro and Muni System projects. Overall, the total estimated project costs appear to be conservative. The cost estimates were prepared by engineering firms based on industry standards and are adequate for projecting future capital improvement costs.

F. Agreements With Participating Agencies

The Metro system provides "wholesale" treatment services, including some sewage transport, treatment and disposal operations, to other cities and districts. The following entities, referred to as the "Original Participating Agencies" entered into sewage disposal agreements with the City of San Diego in 1960:

- City of Chula Vista
- City of Coronado
- City of El Cajon
- City of Imperial Beach
- City of La Mesa
- City of National City
- Lemon Grove Sanitation District
- Spring Valley Sanitation District

Subsequent to that time, the City entered into sewage disposal agreements with the following entities, also known as the "Later Participating Agencies:

- City of Del Mar
- City of Poway
- Lakeside/Alpine Sanitation District
- Otay Water District
- Padre Dam Municipal Water District
- Wintergardens Sewer Sanitation District

Sewage disposal agreements expire on August 21, 2003, for the Original Participating Agencies and on June 30, 2003, for the Later Participating Agencies and, in each case, have a ten year extension option to 2013.

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[1] *Presently, the City's Financing Plan takes a conservative approach and does not anticipate revenue from State Revolving Loan Fund.*

Each participating agency pays its proportionate share of the OM&R expenses of the Metro System. Under the agreements, the OM&R costs include all required repairs, reconstruction, and replacements to the Metro System. As of October 29, 1996, the City and the Participating Agencies agreed on the "Principles of Understanding" (see Exhibit IV-5). This document was established as a basis for agreement regarding the sharing of certain sewer costs.

One important provision of the "Principles of Understanding," Principle 2, states that the Participating Agencies are responsible for paying their fair share based on their proportionate flow within the Metro System, for the entire Metro System including but not limited to the Point Loma and North City facilities, up to their current contract capacity, which includes 234 mgd (now reestablished as 240 mgd), plus all facilities required by the Ocean Pollution Reduction Act of 1994 (OPRA).

Another provision, Principle 6, establishes the Metro System share of the costs for four specific capital improvement projects. The percentages to be paid by the Participating Agencies for these four projects are:

29% of Pump Station No. 2, Pumps 7-8
55% of the North Metro Interceptor
66% of Sedimentation Basins Nos. 9 and 10
24% of Sedimentation Basins Nos. 11 and 12

However, certain Later Participating Agencies (the City of Poway, the Lakeside/Alpine Sanitation District, the Padre Dam Municipal Water District, and the Wintergardens Sewer Maintenance District) will continue to pay the costs of both sedimentation basin projects based on 100 percent.

Another important provision of the "Principles of Understanding" is found in Principle No. 10, which states that the Metro System, including the Participating Agencies, shall not pay for City of San Diego right-of-way charges. The current Fiscal Year 1997 budget and future budget projections through Fiscal Year 2003 do not allocate right-of-way charges to any of the Participating Agencies.

Through Fiscal Year 1997, OM&R costs were recovered from the Participating Agencies on a flow-only basis without consideration of strength of discharge. The Participating Agencies were billed quarterly by MWWD on the basis of budgeted cost estimates and sewage flow estimates. In the following fiscal year, when actual costs and actual flow data were known, billing adjustments were made to correct for any under or over charges in the previous year. Starting in Fiscal Year 1998, strength based billing was implemented based on budgeted cost estimates and cash flow analyses and on estimated flow, SS, and COD. The same process of adjusting to actuals will take place for Fiscal Year 1998. This will include actual costs, flow, strength and oxygen demand based on cumulative sampling for strength and COD.

The Participating Agencies are responsible for the "retail" sewage collection operations within their respective jurisdictions. The collection systems and many of the transport trunk lines are owned by the individual Participating Agencies. There are also transportation agreements between agencies as flows enter and leave other agencies' boundaries.

VII. ALLOCATION OF EXPENSES TO CUSTOMER CLASSES

For purposes of this discussion, the customer classes are Participating Agencies, the City of San Diego, and Trucked Wastes.

A. Review of Flow and Load Allocation Information

The MWWD Technical Services Division provides City Financing Services personnel with periodic updates on Metro System wastewater flows and loadings. A memorandum dated October 7, 1996 discussed wastewater flow and load projections for the 1997 Financial Plan. That memo is included as Exhibit VII-1. The flow, COD, and SS projections in the memorandum were developed based on historic loadings at the Point Loma Plant and estimated rates of population growth for the City of San Diego and the Participating Agencies. The figures presented in the October 1996 memo were used in this cost-of-service study as the total projected loadings on the Metro System. The average percentage of flow contributed by the City and each of the Participating Agencies from 1994 to 1996 was applied to the projected total Metro System flow for 1997 through 2003 to estimate the flow contribution of each.

Chemical oxygen demand (COD) was used by the MWWD for sampling rather than biochemical oxygen demand (BOD). COD testing was selected over BOD testing because of overall ease of sampling, less potential for procedural error, more timely results, and significantly lower laboratory costs. The Participating Agencies agreed to COD sampling.

COD and SS concentrations were measured at various sampling points within the City and at Participating Agency connection points for the purpose of establishing a strength based billing system. Exhibit VII-2 shows the baseline data measured between June 1995 and December 1996, along with the sampling points at which the measurements were made. Flow-weighted average COD and SS concentrations were calculated for the City and each Participating Agency. Organic and solids loadings on the system were then estimated using the flow projections in conjunction with the average concentrations. Organic and solid loadings of the system are tested daily. Cumulative data was analyzed and estimates for system flow, SS, and COD were provided for Fiscal Year 1998 Strength Based Billing.

For the implementation of Fiscal Year 1998 strength based billing, solid and organic loadings were estimated based on at least six individual samples for each agency, including the City of San Diego. System flow, suspended solids, and COD were also estimated based on plant data collections. Exhibit VII-2 (Table 1) (without system loadings) shows the Flow, SS, and COD sampling average for each agency, for the City of San Diego, and for the system as a whole.

In addition to the flow, solids, and organic loadings contributed by the Participating Agencies, the City of San Diego, and the City of Tijuana via the emergency connection, the Metro System processes trucked wastes. In 1996, over 34 million gallons of trucked domestic and industrial wastes were received from permitted haulers. An additional 1.40 million gallons of domestic only waste was received from permitted haulers by the El Cajon Department of Public Works. Three haulers were also permitted to discharge 1.60 million gallons of grease trap water after separation of grease solids

and oil. A domestic trucked waste characterization study conducted in January 1996 measured average COD and SS concentrations of 19,226 mg/L and 13,780 mg/L, respectively, for more than 60 samples of portable toilet, septic tank, and holding tank wastes. Likewise, return flows from the Fiesta Island sludge dewatering facility add to system loadings. The average decant from Fiesta Island in 1996 was 1.679 mgd and contained 597 mg/L of COD and 1,231 mg/L of SS. Information on trucked waste and Fiesta Island loadings is contained in Appendix VII-1 and, respectively, Exhibit VII-3.

Return flows from Fiesta Island are shared by all system users based on the proportion of flow, COD, and SS that each contributes. Infiltration and inflow (I/I) to the Metro System is component that should be shared proportionately by all users. Wastewater flows from areas outside the City are metered as they enter the Metro System. As a result, the Participating Agencies pay for all of the I/I that occurs in their individual systems. However, adequate data is not currently available to allocate Metro I/I to all system users. MWWD is planning to conduct additional flow monitoring so that I/I can be allocated between the City and the Participating Agencies.

B. Distribution of System Loadings to City and Participating Agencies

Tables VII-1, VII-2 and VII-3 present projected annual flow, COD, and SS contributions, respectively, for the Metro System. As discussed above, return flows from Fiesta Island have been allocated to all the system users based on the proportion of flow, COD, and SS that each contributes.

Including its share of Fiesta Island loadings, the City contributes an estimated 70.19 percent of the flow, 73.74 percent of the COD, and 74.89 percent of the SS to the Metro System. The Participating Agencies contribute approximately 29.75 percent of the flow, 24.74 percent of the COD, and 22.49 percent of the SS. System flow was estimated to be 68,225 million gallons, which included 638.74 million gallons of return flow. COD was estimated to be 411,125 thousand pounds, including 3,051 thousand pounds regional return. Trucked wastes only account for 0.06 percent of the flow but contribute an estimated 1.52 percent of the COD and 2.62 percent of the SS.

C. Distribution of System Loadings to Customer Classes Within The City

Metered water use and sewer billing records were analyzed to estimate system loadings from sewer customers within the City. Annual water usage in hundred cubic feet (HCF) was provided by the Water Utilities Department for the single family and other domestic customer classes. Similar information was also provided for individual commercial, industrial, and other sewer accounts that have been assigned a sewer quality code (SQC). The SQC designates the SS contributed by a customer and the percentage of the metered water that is returned to the sewer system.

Table VII-4 lists historic water usage for single family and other domestic accounts. These two customer classes used 53,572,742 HCF during the 12 month period ending March 31, 1997. However, the estimated return to the sewer is less than the metered water use and, therefore, sewer bills for single family dwellings are based on 90% of the winter months water use (December through March). The average winter months water use for single family dwellings translates to a 67.78 percent return to sewer relative to the total metered HCF for the entire year. Literature on this

subject indicates that between 60 and 80 percent of the water consumed typically becomes wastewater, with the lower percentages applicable to semi-arid regions of the Southwestern United States. The calculated return to sewer for single family dwellings (67.78%) is within the typical range (60% to 80%). Sewer bills for multiple living units are calculated using actual metered water usage, but receive a 5.0 percent reduction to reflect an estimated 95 percent return to sewer for this user class.

The City's share of Metro System loadings was allocated to City sewer customers by adjusting total metered water use to reflect the percent return to sewer and calculating SS and COD loadings based on assigned concentrations for each rate code or sewer quality code. SS concentrations of 277 mg/L were used to determine loadings for single family and other domestic customers. All sewer customers with Sewer Quality Codes have been assigned representative SS concentrations by the Water Utilities Department Sewer Classification Program based on the Standard Industrial Classification (SIC) of the sewer customer. The SIC Guidelines list used by the Sewer Classification Program is included as Exhibit VII-6.

Commercial and industrial accounts were sorted by SIC code and SQC and were assigned the SS concentrations listed in Exhibit VII-4. However, some of the original classification assignments have been changed through an appeal process which allows reassignment to another SQC if sampling data shows that the actual SS is not consistent with the assigned SQC. Where the SS for the SIC code did not agree with the SS for the SQC, the mid-point value for the SQC was assigned to the account.

COD values were assigned to City sewer customers based on typical COD concentrations provided by Los Angeles County Sanitation District No. 1 and BOD information contained in the SWRCB Guidelines.

Appendix VII-2 presents the City's contribution to flow, COD and SS based on metered water use for the period ending March 31, 1997. Calculations for the single family category were based on a 67.78 percent return to sewer and a 95 percent rate was used for the other domestic category. The mid-point return to sewer percentage was used for all customers with SQC assignments. Table VII-5 summarizes the results of this analysis. As shown by the comparison at the bottom of Table VII-5, the total City loadings produced by this analysis do not match the City's overall share of system loadings presented in Tables VII-1, VII-2 and VII-3. Therefore, the unit cost factors for flow, COD, and SS that are calculated for the Metro and Muni systems have to be adjusted by the multipliers shown when determining cost allocations for City customers.

As noted above, total loadings for the City based on the allocation to customer classes do not match the City's overall share of Metro system loadings. The City's flow contribution calculated by the allocation process is only about seven percent less than the City's share of Metro flows, but the COD and SS loads are more than 20 percent lower. It is reasonable to assume that part of the difference in flow can be attributed to I/I in the Muni and Metro systems. The amount of I/I in the system is not known, but it may constitute a considerable amount of the seven percent, in which case the assumed return to sewer values would produce flows comparable to actual and projected values. The infiltration component of I/I is typically low in both COD and SS, while the amount of COD and SS from inflow varies based on the source. Since inflow events are isolated and directly related to

precipitation events, it is anticipated that inflow does not contribute much to the total COD and SS loads. The most likely explanation for the difference in COD and SS loadings is that the concentrations used in the allocation process do not accurately reflect actual conditions. Rather than adjusting concentrations for individual customers or customer classes to increase the total loadings, a unit cost multiplier was used to increase the cost allocation to each class by a proportional amount.

D. Unit Costs for Flow, COD, and SS

Table VII-6 calculates unit costs for flow, COD, and SS for the Metro and Muni systems for the years 1997 through 2003, inclusive, and the average for the seven year period. More than 90 percent of Muni System costs are related to flow while Metro System costs are more evenly distributed between flow, COD, and SS. The calculated unit costs vary from year to year based on projected expenditures but generally exhibit an upward trend. Unit costs are higher for the City than for the Participating Agencies because the City has to fund its share of Metro System costs plus all of the costs related to the Muni System. Each of the Participating Agencies will have to calculate the costs related to their individual sewage collection and conveyance systems.

E. Total Annual Cost Allocations for Flow, COD, and SS

Projected annual cost allocations for the Participating Agencies, the City, and trucked waste haulers are shown in Table VII-7. The separate cost allocations for flow, COD, and SS which are combined in Table VII-7 are presented in Tables VII-7a, 7b, and 7c.

Table VII-7 allocates system costs to the City, Participating Agencies, and trucked waste haulers. Total costs for the City include both Muni and Metro system costs. As shown in Tables VII-1, 2, and 3, the City accounts for about 70 percent of flow and about 74 percent of COD and SS. Overall, the City is responsible for about 82 percent of system costs which includes both the Muni and Metro systems, the Participating Agencies account for approximately 17 percent, and trucked wastes make up the balance.

EXHIBIT 26

BUSINESS SENSITIVE

From: Bill Hanley
To: LOVELAND GEORGE, SCHLESINGER DAVE, HAMILTON SUSAN
Date: 11/12/98 10:08am
Subject: MEETING WITH KELCO - STRENGTH BASED BILLING

George, Dave & Susan - For your info. I just scheduled a meeting with Steve Zapoticzny on Monday, Nov 23rd, at 11:00am at 600 B St to discuss the impact of Strength Based Billing on Kelco. During our telephone conversation, Steve stated that they estimate that Billing based on COD would result in a $4 million per annum "surcharge" to Kelco.

CC: MOFFITT PHIL, GRIFFITHS HEDY, BINGHAM CLAY, BROMFI...

EXHIBIT 27

Office of
The City Attorney
City of San Diego

MEMORANDUM
MS 59

533-5800

DATE: November 18, 1998

TO: Bill Hanley, Deputy Director, Metropolitan Wastewater Department, Services and Contracts Division

FROM: City Attorney

SUBJECT: System Charges Requirements

You recently requested the statutory basis for our system charges based on flow and strength, which I attach in descending order.

1. Clean Water Act, 33 U.S.C. section 1284(b)(1);
2. Code of Federal Regulations implementing above. 40 C.F.R. section 35.2140;
3. State Water Resources Control Board Revenue Program Guidelines implementing above;
4. Regional Wastewater Disposal Agreement (sections III.D. and V.B.3. a, b, and c);
5. San Diego Municipal Code section 64.0404 authorizing adoption of system of charges by resolution.

As you can see, these trace the legal authority to impose a service charge based on proportionate contribution to the total wastewater load.

CASEY GWINN, City Attorney

By Ted

Ted Bromfield
Deputy City Attorney

TB:mb
Attachments:1-5
cc: Hedy Griffiths

Clean Water Act

(b) Additional determinations; issuance of guidelines; approval by Administrator; system of charges

(1) Notwithstanding any other provision of this subchapter, the Administrator shall not approve any grant for any treatment works under section 1281(g)(1) of this title after March 1, 1973, unless he shall first have determined that the applicant (A) has adopted or will adopt a system of charges to assure that each recipient of waste treatment services within the applicant's jurisdiction, as determined by the Administrator, will pay its proportionate share (except as otherwise provided in this paragraph) of the costs of operation and maintenance (including replacement) of any waste treatment services provided by the applicant; and (B) has legal, institutional, managerial, and financial capability to insure adequate construction, operation, and maintenance of treatment works throughout the applicant's jurisdiction, as determined by the Administrator. In any case where an applicant which, as of December 27, 1977, uses a system of dedicated ad valorem taxes and the Administrator determines that the applicant has a system of charges which results in the distribution of operation and maintenance costs for treatment works within the applicant's jurisdiction, to each user class, in proportion to the contribution to the total cost of operation and maintenance of such works by each user class (taking into account total waste water loading of such works, the constituent elements of the wastes, and other appropriate factors), and such applicant is otherwise in compliance with clause (A) of this paragraph with respect to each industrial user, then such dedicated ad valorem tax system shall be deemed to be the user charge system meeting the requirements of clause (A) of this paragraph for the residential user class and such small non-residential user classes as defined by the Administrator. In defining small non-residential users, the Administrator shall consider the volume of wastes discharged into the treatment works by such users and the constituent elements of such wastes as well as such other factors as he deems appropriate. A system of user charges which imposes a lower charge for low-income residential users (as defined by the Administrator) shall be deemed to be a user charge system meeting the requirements of clause (A) of this paragraph if the Administrator determines that such system was adopted after public notice and hearing.

[See main volume for text of (2) to (4); (c) and (d)]

(As amended Feb. 4, 1987, Pub.L. 100–4, Title II, § 205(a)–(c), 101 Stat. 18.)

[1] So in original. The period probably should be a semicolon.

HISTORICAL AND STATUTORY NOTES

1987 Amendment

Subsec. (a)(1). Pub.L. 100–4, § 205(a), substituted provision that the required areawide waste treatment management plan is being implemented for such area and the proposed works are included in such plan or such plan is being developed and reasonable progress is being made towards its implementation and the proposed treatment works will be included in such plan for provision that the treatment works are included in any applicable areawide waste treatment management plan.

Subsec. (a)(2). Pub.L. 100–4, § 205(b), substituted provision that the State in which a project is located is implementing any required plan under section 1313(e) of this title and the proposed treatment works are in conformity with such plan or such plan is being developed and the proposed treatment works will be in conformity with such plan and such State is in compliance with section 1315(b) of this title for provision that such treatment works are in conformity with any applicable State plan under section 1313(e) of this title.

Subsec. (b)(1). Pub.L. 100–4, § 205(c), inserted provision that a system of user charges which imposes a lower charge for low-income residential users be deemed a user charge system meeting requirements of cl. (A) of this paragraph if the Administrator determines such system was adopted after public notice and hearing.

Effective Date of 1987 Amendment

Section 205(d) of Pub.L. 100-4 provided that: "This section [amending subsecs. (a)(1), (2), and (b)(1) of this section shall take effect on the date of the enactment of this Act [Feb. 4, 1987], except that the amendments made by subsections (a) [amending subsec. (a)(1) of this section] and (b) [amending subsec. (a)(2) of this section] shall take effect on the last day of the two-year period beginning on such date of enactment [Feb. 4, 1987]."

Legislative History

For legislative history and purpose of Pub.L. 100–4, see 1987 U.S.Code Cong. and Adm.News, p. 5.

NOTES OF DECISIONS

2. Construction with State law

Gaynor-Stafford Industries, Inc. v. Water Pollution Control Authority of Town of Stafford, Conn.1984, 474 A.2d 752, 192 Conn. 638, [main volume] certiorari denied 105 S.Ct. 328, 469 U.S. 932, 83 L.Ed.2d 265

9. User fees—Generally

Although, in regard to construction of a water treatment facility, the contracts between two industrial users and county public service authority included provisions requiring Industrial Cost Recovery payments in accordance with the Federal Water Pollution Control Act, the inclusion of that contractual obligation in the formal contracts was simply a necessary precondition to receipt of fed negotiated by bargain; acco repeal of the s ments, the ex grantee, was s of state cost ICR payment. Inc. v. Aiken C.A.4 (S.C.) 15

§ 1285. Allotment of grant funds

[See main volume for text of (a) a

(c) Funds for fiscal years during period October 1, 19 funds for fiscal years 1982 to 1990; determination

[See main volume for text of (

(2) Sums authorized to be appropriated pursuant to sec fiscal years 1982, 1983, 1984, and 1985 shall be allotted Administrator not later than the tenth day which begir Notwithstanding any other provision of law, sums authori September 30, 1982, shall be allotted in accordance with Numbered 95–30 of the Committee on Public Works and T Representatives. Sums authorized for the fiscal years September 30, 1984, September 30, 1985, and September accordance with the following table:

[See main volume for text of tal

(3) Fiscal years 1987–1990

Sums authorized to be appropriated pursuant to section years 1987, 1988, 1989, and 1990 shall be allotted for each tor not later than the 10th day which begins after Febru for such fiscal years shall be allotted in accordance with the

States:	
Alabama	
Alaska	
Arizona	
Arkansas	
California	
Colorado	
Connecticut	
Delaware	
District of Columbia	
Florida	
Georgia	
Hawaii	
Idaho	
Illinois	
Indiana	
Iowa	
Kansas	
Kentucky	
Louisiana	
Maine	
Maryland	
Massachusetts	
Michigan	
Minnesota	
Mississippi	
Missouri	
Montana	
Nebraska	

(6) The grantee shall execute appropriate grant conditions or releases protecting the Federal Government from any claim for any of the costs of construction due to the additional capacity.

§ 35.2125 Treatment of wastewater from industrial users.

(a) Grant assistance shall not be provided for a project unless the project is included in a complete waste treatment system and the principal purpose of both the project and the system is for the treatment of domestic wastewater of the entire community, area, region or district concerned.

(b) Allowable project costs do not include:

(1) Costs of interceptor or collector sewers constructed exclusively, or almost exclusively, to serve industrial users; or

(2) Costs for control or removal of pollutants in wastewater introduced into the treatment works by industrial users, unless the applicant is required to remove such pollutants introduced from nonindustrial users.

§ 35.2127 Federal facilities.

Grant assistance shall not be provided for costs to transport or treat wastewater produced by a facility that is owned and operated by the Federal Government which contributes more than 250,000 gallons per day or 5 percent of the design flow of the complete waste treatment system, whichever is less.

(Approved by the Office of Management and Budget under control number 2040-0027)

§ 35.2130 Sewer use ordinance.

The sewer use ordinance (see also §§ 35.2122 and 35.2208) or other legally binding document shall prohibit any new connections from inflow sources into the treatment works and require that new sewers and connections to the treatment works are properly designed and constructed. The ordinance or other legally binding document shall also require that all wastewater introduced into the treatment works not contain toxics or other pollutants in amounts or concentrations that endanger public safety and physical integrity of the treatment works; cause violation of effluent or water quality limitations; or preclude the selection of the most cost-effective alternative for wastewater treatment and sludge disposal.

(Approved by the Office of Management and Budget under control number 2040-0027)

§ 35.2140 User charge system.

The user charge system (see §§ 35.2122 and 35.2208) must be designed to produce adequate revenues required for operation and maintenance (including replacement). It shall provide that each user which discharges pollutants that cause an increase in the cost of managing the effluent or sludge from the treatment works shall pay for such increased cost. The user charge system shall be based on either actual use under paragraph (a) of this section, ad valorem taxes under paragraph (b) of this section, or a combination of the two.

(a) *User charge system based on actual use.* A grantee's user charge system based on actual use (or estimated use) of wastewater treatment services shall provide that each user (or user class) pays its proportionate share of operation and maintenance (including replacement) costs of treatment works within the grantee's service area, based on the user's proportionate contribution to the total wastewater loading from all users (or user classes).

(b) *User charge system based on ad valorem taxes.* A grantee's user charge system which is based on ad valorem taxes may be approved if:

(1) On December 27, 1977, the grantee had in existence a system of dedicated ad valorem taxes which collected revenues to pay the cost of operation and maintenance of wastewater treatment works within the grantee's service area and the grantee has continued to use that system;

(2) The ad valorem user charge system distributes the operation and maintenance (including replacement) costs for all treatment works in the grantee's jurisdiction to the residential and small non-residential user class (including at the grantee's option non-residential, commercial and industrial users that introduce no more than the equivalent of 25,000 gallons per da domestic sanitary wastes to the t ment works), in proportion to the of the treatment works by this c and

(3) Each member of the indus user and commercial user class w discharges more than 25,000 gallon day of sanitary waste pays its sha the costs of operation and mainten (including replacement) of the t ment works based upon charges fo tual use.

(c) *Notification.* Each user charge tem must provide that each user be tified, at least annually, in conjunc with a regular bill (or other mean ceptable to the Regional Adm trator), of the rate and that portic the user charges or ad valorem t which are attributable to wastew treatment services.

(d) *Financial management system.* I user charge system must include adequate financial management tem that will accurately account revenues generated by the system expenditures for operation and mai nance (including replacement) of treatment system, based on an quate budget identifying the basis determining the annual operation maintenance costs and the costs of sonnel, material, energy and adm tration.

(e) *Charges for operation and ma nance for extraneous flows.* The charge system shall provide that costs of operation and maintenanc all flow not directly attributabl users (i.e., infiltration/inflow) be tributed among all users based upo ther of the following:

(1) In the same manner that it tributes the costs for their actual or

(2) Under a system which uses on any combination of the following tors on a reasonable basis:

(i) Flow volume of the users;

(ii) Land area of the users;

(iii) Number of hookups or discha of the users;

(iv) Property valuation of the us If the grantee has an approved charge system based on ad valo taxes.

(f) After completion of buildin project, revenue from the project (

EXHIBIT 28

THE CITY OF SAN DIEGO

S MWWDPROG

1998070099

November 24, 1998

Mr. David McKinley
Monsanto Kelco Company
2145 E. Belt Street
San Diego, CA 92113

Dear David McKinley:

SUBJECT: Strength Based Billing; Allocation Factors Based on Functional-Design Approach

In response to your request during our meeting of November 23, 1998, attached is the most recent version of the Allocation Factors Based on Functional-Design Approach for Strength Based Billing. As we discussed, I would truly appreciate your comments on the allocation factors contained in the attached document.

If you have any questions concerning this matter, please do not hesitate to contact me at (619) 235-1957.

Sincerely,

WILLIAM J. HANLEY, III
Deputy Director

mr

Attachment: Allocation Factors Based on Functional-Design Approach

cc: George I. Loveland, MS 9A
Dave Schlesinger
Susan Hamilton
Alan Langworthy, MS 45A
Hedy Griffiths
Monica Ramos

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DIVERSITY

Metropolitan Wastewater • Public Works
600 B Street, Suite 500 • San Diego, CA 92101-4587
Tel (619) 533-4200 Fax (619) 533-4267

MWWD-BH0892

6-30-05 COS SEC Subpoena

ALLOCATION FACTORS

BASED ON

FUNCTIONAL-DESIGN APPROACH

MWWD-BH0893

6-30-05 COS SEC Subpoena

DEVELOPMENT OF COST ALLOCATION FACTORS FOR THE CIP ITEMS IN EXHIBITS 4-1B and 4-1C - THE FUNCTIONAL-DESIGN APPROACH

METRO BIOSOLIDS CENTER - DIRECT COSTS

CIP #40-921.0 FIRP Phase II Digested Sludge and Centrate Pipelines

For PLWTP digested sludge and dewatering centrate the following cost allocation seems appropriate

Flow / SS / BOD = 0 / 60 / 40 %

The SS/BOD cost allocation factors are derived as follows:

SS Removal (in PLWTP primary clarifier) = 80%
BOD Removal (in PLWTP primary clarifier) = 58%
Total = 80 + 58 = 138
SS = (80/138) x 100 = 58% (Rounded to 60%)
BOD = (58/138) x 100 = 42% (Rounded to 40%)

The centrate pipeline also carries centrate that originates from thickening and dewatering of the NCWRP sludge. The cost allocation for the NCWRP combined sludge (primary & WAS) for Flow/SS/BOD is 0/50/50 % (explained later under item North City Raw Sludge & Water Pipelines). Considering this portion of centrate (with 0/50/50 % allocation) to be nearly equal in volume to the PLWTP related centrate (with 0/60/40 % allocation), an acceptable allocation for this item is,

Flow / SS / BOD = 0 / 55 / 45 %

CIP #42.910 North City Sludge Processing Facility

This facility processes combined primary and waste activated sludge received from the NCWRP. The cost allocation split between SS/BOD in combined primary sludge and WAS is determined as follows.

Assume raw influent wastewater with SS/BOD of 250/250 mg/L.
Primary Treatment removes 60% SS, 35% BOD (Typical)

EXHIBIT 29

BUSINESS SENSITIVE

From: Hedy Griffiths
To: WZH
Date: 12/30/98 10:57am
Subject: SWRCB / Ron Blair and Kelko

Bill, just spoke with Ron. He has had some verbal conversations with Kelko (Nutrasweet?) - he couldn't recall the name of the person.

Said he did say it would be up to the City (local government) to decide whether to amalgomate all costs, charging an average cost or to review individual customers by line or watershed as to where sewage is treated and charge accordingly. - which would mean lower costs for those going thru Pt Loma and higher for NCWRP - "the luck of the draw"

He said he couldn't imagine any reason why we would want to do that! But basically was telling Kelko, it's not the State that decides but rather, the local government. He mentioned that City of LA also amalgamates costs.

He did mention that any individual industrial which discharges more than 25Kgpd should have an individual calculation for their rate. I told him our Industrial Waste Dept handled that. Also, he thought they were currently being charged at a higher rate for BOD, I told him we're still on TSS and Flow for Municipal customers.

Also, he said Kelko was stuck on City not spending money for BOD removal and he pointed out that it is his understanding that in theory, if BOD is not removed to specified degree, City reduces BOD by increasing suspended solids removal, therefore there is an indirect cost at Point Loma for BOD removal. - therefore, it is not true that we don't spend money on BOD removal at Pt. Loma.

He mentioned speaking with Karen Keese and another consultant (he wasn't sure if it was Paul Cooley) who seemed satisfied on behalf of the PA s that our COD/BOD charges were appropriate - referred Kelko to call them, but not certain if they did.

He said he talked to Kelko about getting away from the mind set that the City was just charging them a lot of money because we could - he doesn't believe that is the case, if so, that's where SWRCB would step in.

We talked some more about system charges, the acceptance by the PAs, knowing that the system as a whole is what has allowed us to avoid secondary treatment, - therefore system does benefit all.. He totally agrees.

I asked if there was any written correspondence, he said it was all verbal - nothing in writing from Kelko or SWRCB.

CC: LCM, M1S

EXHIBIT 30

BLACK & VEATCH

201 South Lake Blvd. Suite 803
Pasadena, California 91101

Tel (626) 583-1881
Fax: (626) 583-1411

Black & Veatch Corporation

January 15, 2002

Mr. Dennis Kahlie
Utilities Financing Administrator
City of San Diego
202 C Street, MS 7B
San Diego, CA 92101

Subject: Sewer Cost of Service and Rate Design Report

Dear Mr. Kahlie:

Black & Veatch is pleased to present this report on the sewer cost of service, rate design and Capacity Fee study (Study) to the City of San Diego (City). We are confident that the results developed based on a cost of service analysis and stakeholder input, when implemented, will result in fair and equitable sewer rates to the City's users and the revenue program will be acceptable to the State Water Resources Control Board (SWRCB).

The Study involved a comprehensive review of the City's financial plan, user classifications and rate structures. In addition, the Study also included a review of the City's existing capacity fees. An important feature of this Study was the participation of a City selected Stakeholder Group (Group), representing various business and residential interests. The user classifications and rate structures resulting from this Study reflect the Group's input. The recommended changes to the City's existing user classifications, rate structures and capacity fee are discussed below.

User Classification: Based on our review of the City's existing residential and commercial/industrial user classifications and the Group's suggestions, we propose the following:

- We recommend that the City continue its existing classification of single family residential (SFR) and multi-family residential (MFR) users.
- We recommend that the following changes be made to the existing commercial/industrial user classifications to ensure compliance with SWRCB user classification requirements and to facilitate the incorporation of chemical oxygen demand (COD) into the rate structure, as mandated by the SWRCB:
  - Commercial/industrial users with greater than 25,000 gallons per day (gpd) of wastewater discharge be categorized as large users.
  - Commercial/industrial users that discharge less than or equal to 25,000 gpd of wastewater flows be classified and billed for service using a user class matrix that is based on total suspended solids (TSS) and COD wastewater parameters instead of the current TSS/Return Factor parameters. Return factors will continue to be used to determine monthly charges.

Rate Structure: Based on our review of the City's existing residential and commercial/industrial rate structures and the Group's suggestions, we propose the following:

- Continue the use of a rate structure that includes both a fixed monthly base fee and a variable water usage charge.
- Establish a uniform monthly base fee for all users instead of the existing practice of a class specific base fee. The recommended uniform base fee for all users is $9.93, effective March 2003.
- Continue bi-monthly SFR user charges based on a 30-day average winter water usage but with a usage cap of 14 hundred cubic feet (hcf) of water instead of the existing 10 hcf. The MFR charges will continue to be based on monthly water usage.
- Develop a two-dimensional rate matrix based on TSS and COD strength ranges for commercial/industrial users with a discharge less than or equal to 25,000 gpd. The rate for each TSS/COD strength range in the matrix, is to be computed based on the mid-point strength of the range.
- Calculate wastewater charges individually based on cost of service unit rates for commercial/industrial users discharging greater than 25,000 gpd of flows.

Capacity Fee: Based on our review of the City's existing capacity fee, we estimate a near-full-cost-recovery capacity fee of $5,349 per EDU. Implementation of this higher capacity fee will result in an additional capacity fee revenue of $11.3 million in fiscal year 2003.

The recommended user classifications, rate structure, and rates are presented in the Executive Summary and the rationale is discussed in detail in Sections 2 through 9 of the report. The implementation of the recommended wastewater rates and capacity fee should result in a revenue program that is fair and equitable and acceptable to the SWRCB.

It was a pleasure working with you and we wish to express our thanks to Mr. Eric Adachi, Mr. Bill Hanley, Ms. Hedy Griffiths, Mr Guann Hwang and other staff members of the Metropolitan Wastewater Department for the support and cooperation extended throughout the study. We would also like to acknowledge the participation of and input provided by the City's cost of service stakeholder group. If you have any questions, please call me at (626) 583-1881.

Very truly yours,
BLACK & VEATCH CORPORATION

Sudhir Pardiwala
Project Manager

Prabha Kumar
Management Analyst

Section 1
Executive Summary

The City of San Diego (City) wanted to conduct a comprehensive cost of service and rate design study (Study) that includes a review of revenue requirements, user classifications, costs of service, and the design of a system of user charges for the City's wastewater service. In addition, the City also desired a review of its existing capacity fees. This report documents the results of the Study, recommends changes to user classification and cost allocation, and proposes wastewater rates that the City should charge its retail customers beginning March 1st, 2002, or as soon as feasible thereafter.

The City provides both wholesale wastewater services to the Participating Agencies (PAs) and retail service to the City's users. The City is partially financing its capital projects through a combination of federal loans and grants, which are administered by the State Water Resources Control Board (SWRCB). As a recipient of various federal grants and state loans, the City is obligated to comply with SWRCB's Revenue Program Guidelines. In order to be consistent with the Revenue Program requirements, SWRCB is mandating that the City modify its existing cost allocation basis and include the Chemical Oxygen Demand (COD) parameter in its rate structure.

The focus of this Study is primarily on the City's retail wastewater service. The specific objectives of this Study include:

- Review of the costs of providing regional wastewater collection, conveyance, treatment and disposal services to the City's users and to the PAs outside the City's retail service area.
- Determination of costs of service for the City's retail service area.
- Allocation of costs of service to the wastewater parameters of Flow, Total Suspended Solids (TSS) and COD.
- Allocation of parameter costs to the City's retail service user classes.
- Design of a system of user charges including wastewater user charges and capacity fees.

The following sections present a documentation of the cost of service review and analysis findings and the recommendations of the study.

REVIEW FINDINGS

This section of the Executive Summary provides a brief background of the wastewater system, a review of the revenue requirements and user classifications, an evaluation of issues, an analysis of cost of service, and the design of wastewater rates and capacity fees.

Wastewater System

System Infrastructure: The City owns and operates a regional wastewater system that includes both the Municipal (Muni) System and the Metro System. The Muni System is primarily a sewage collection system that serves the City's service area. The Metro system includes advanced primary treatment, tertiary reclamation, sludge processing facilities and an ocean outfall. For the regional system, the City holds a NPDES permit that stipulates discharge limitations. The City provides wastewater service to

15 PAs pursuant to the terms of the Regional Wastewater Disposal Agreement.

Existing Rate Structure: The City's existing wastewater rate structures for the Single Family Residential (SFR), Multi-Family Residential (MFR) and Commercial/Industrial user classes include a fixed Base Fee and a Usage Rate. The Base Fee varies by user class. The MFR and commercial/industrial users have the same monthly base fee of $0.51 per meter. SFR users have a much higher monthly base fee of $8.77. These fees are effective as of March 1, 2001.

The current SFR usage rate effective as of July 1, 2001 is $3.0481 per hundred cubic feet (hcf) of water usage. The bi-monthly SFR usage charges are determined by applying the SFR usage rate to a user's 30-day average winter water usage with a usage cap of 10 hcf. The MFR users are charged based on monthly water usage but with flows estimated at a 95 percent return to sewer.

The existing rate schedule for the commercial/industrial users is in the form of a 10x20 TSS/Return to Sewer matrix with 200 user rates. The rate applied to a user's monthly water usage depends on the user's TSS strength and percent return to sewer. Rates for Commercial/Industrial users that have TSS strengths greater than 1,000 mg/l, are computed individually and adjusted for percent return to sewer.

Review of Revenue Requirements

The City's principal sources of operating revenues are the sewer service charges from the City's users and the full cost recovery revenues from the PAs per their cost sharing agreements with the City. The primary sources of capital revenues include sewer connection fees, capital fund balance, bond proceeds, state and federal grants & loans, capacity fees from the City and the PAs, pay-as-you-go revenues from the PAs, and interest earnings.

The City estimates overall annual wastewater Operation and Maintenance (O&M) expenditures in the range of $173 - $198 million during FY 2001 through FY 2005. The City's retail service area O&M expenditures, which are the focus of this Study, are estimated to be in the range of $148 to $168 million. Existing debt service requirements during the study period include annual payments in the range of $77 to $99 million. During the study period FY 2001 to FY 2005, the total wastewater Capital Improvement Program (CIP) is estimated at nearly $618 million.

In order to meet projected revenue requirements and to maintain desired operating and debt service reserve funds, the City proposed the following revenue adjustments, which were approved by the City Council on October 16th, 2001:

Effective Date	Increases
March 1, 2002	7.5 percent
March 1, 2003	7.5 percent
March 1, 2004	7.5 percent
March 1, 2005	7.5 percent

Issues Examined

This Study involved extensive participation of a Stakeholder Group (Group). The four major issues that were examined and for which stakeholder input was obtained include: Compliance with SWRCB regulatory requirements, classification of commercial/industrial users, allocation method used to allocate costs to the wastewater parameters of flow, TSS and COD and rate structure alternatives.

Cost of Service

The total FY 2002 cost of service to be recovered from the City's retail users is estimated at nearly $194 million, of which $130 million is operating costs and the remaining $64 million are capital costs.

The cost of service allocations conducted in this study are based on the functional-design method that was approved by the PAs and SWRCB. The revenue requirements are allocated to the different user classes proportionate to their use of the wastewater system. As mandated by SWRCB, allocations are based on flows, TSS and COD parameters. The cost of service allocation performed for the City's retail service area users is consistent with the system-wide proportionate use approach used in allocating revenue requirements between the City and the PAs.

Rate Design

The rate structures designed in this Study incorporate the COD parameter as mandated by the SWRCB and provide for a system of user charges that result in fair and equitable recovery of costs from the various user classes.

STUDY RECOMMENDATIONS

This section of the Executive Summary outlines our recommendations. The proposed changes include various aspects of the study including user classification, cost allocation, wastewater rate structures and capacity fees.

Proposed User Classification

We recommend that the City continue its existing classification of SFR and MFR users. However, to ensure compliance with SWRCB user classification requirements and to facilitate the incorporation of COD into the rate structure, we recommend that changes be made to the existing commercial/industrial user classifications.

The SWRCB user classification guidelines stipulate that costs must be allocated individually to large commercial users discharging more than 25,000 gpd. Therefore, we recommend that commercial/industrial users with greater than 25,000 gpd of wastewater discharge be categorized as large users and rates be individually calculated for these users. The City currently has nearly 150 large users.

We recommend that the City's commercial/industrial users that discharge less than or equal to 25,000 gpd of wastewater flows be classified and billed for service using a user class matrix that is based on TSS and COD wastewater parameters instead of the current TSS/Return Factor parameters. We recommend that the return to sewer percentage be directly applied to each user's metered water consumption (to estimate wastewater flows) during sewer bill computations.

Cost Allocation

We recommend the continued use of the functional-design method in allocating costs to the wastewater parameters of flows, TSS and COD and the allocation of costs to the user classes proportionate to their use of the wastewater system.

Comparing revenues under the proposed rate structure and the current rate structure after the 7.5 percent revenue adjustment in March 2002, there is a small decline in MFR annual revenues under the proposed rate structure. Similarly, estimated FY 2002 SFR user revenues, as a percentage of total user revenues, are about two percent lower under the proposed rate structure than under the current rate structure. These decreases in residential revenues are offset by an increase in the commercial/industrial user class revenues. This shift in user class revenue distribution between the residential and commercial/industrial user classes is directly attributable to the introduction of the COD parameter in the cost of service allocation process, and the fact that many commercial/industrial businesses such as supermarkets, food processing and organic chemical industries and restaurants have much higher COD strengths than residential users.

Rate Design

Black & Veatch recommends the continued use of a rate structure that includes both a fixed monthly base fee and a variable water usage charge.

Base Fee: With respect to base fees, we recommend that the City establish a uniform monthly base fee for all users instead of the existing method of varying base fees. Of the three base fee options examined, as selected by the stakeholder group, we recommend maintaining the base fee under $10.00 since a higher base fee would adversely impact users that have low water/sewer usage. Therefore, we recommend a monthly base fee of $9.93 for FY 2002 for all users.

Residential Usage Rate: We recommend that the City continue its existing method of computing bi-monthly SFR wastewater charges, but with a usage cap of 14 hcf instead of the existing 10 hcf cap. Three different usage cap alternatives were examined and based on stakeholder group input, we recommend a usage cap of 14 hcf. The mass balance analysis also indicates a need for a higher usage cap. We recommend that the City continue its existing method of determining bi-monthly user charges based on a 30-day average winter water usage and continue to estimate MFR wastewater usage charges based on monthly water usage. Table ES-1 presents a summary of the Residential Rate Schedule.

Commercial/Industrial Usage Rate: For commercial/industrial users that discharge less than 25,000 gpd of flows, we recommend that the City establish a two-dimensional rate matrix based on TSS and COD strength ranges. The wastewater rates are computed for each TSS/COD strength range based on the mid-point strength of the range. Table ES-2 presents the commercial/industrial rate matrix.

TABLE ES-1 SUMMARY OF RESIDENTIAL RATE SCHEDULE (FY 2002)

Description	Usage Rate $/hcf
SFR Usage Rate ($/hcf of Water) (1)	$2.22
MFR Usage Rate ($/hcf/Water)	$2.77

NOTE
(1) Rate based on a usage cap of 14 hcf.

TABLE ES-2 COMMERCIAL/INDUSTRIAL USER CLASS (≤ 25,000 GPD Discharge) FY 2002

(mg/l)		TSS 0-100	TSS 101-200	TSS 201-300	TSS 301-400	TSS 401-500	TSS 501-600	TSS 601-700	TSS 701-800	TSS 801-900	TSS 901-1000
COD	COD	A	B	C	D	E	F	G	H	I	J
0-200	AA	$2.21	$2.43	$2.64	$2.85	$3.06	$3.28	$3.49	$3.70	$3.91	$4.13
201-400	BB	$2.37	$2.58	$2.79	$3.00	$3.22	$3.43	$3.64	$3.85	$4.07	$4.28
401-600	CC	$2.52	$2.73	$2.95	$3.16	$3.37	$3.58	$3.79	$4.01	$4.22	$4.43
601-800	DD	$2.67	$2.89	$3.10	$3.31	$3.52	$3.74	$3.95	$4.16	$4.37	$4.59
801-1000	EE	$2.83	$3.04	$3.25	$3.46	$3.68	$3.89	$4.10	$4.31	$4.53	$4.74
1001-1200	FF	$2.98	$3.19	$3.41	$3.62	$3.83	$4.04	$4.25	$4.47	$4.68	$4.89
1201-1400	GG	$3.13	$3.35	$3.56	$3.77	$3.98	$4.20	$4.41	$4.62	$4.83	$5.05
1401-1600	HH	$3.29	$3.50	$3.71	$3.92	$4.14	$4.35	$4.56	$4.77	$4.99	$5.20
1601-1800	II	$3.44	$3.65	$3.87	$4.08	$4.29	$4.50	$4.71	$4.93	$5.14	$5.35
1801-2000	JJ	$3.59	$3.81	$4.02	$4.23	$4.44	$4.66	$4.87	$5.08	$5.29	$5.51
2001-2200	KK	$3.75	$3.96	$4.17	$4.38	$4.60	$4.81	$5.02	$5.23	$5.45	$5.66

NOTE: (1) The rate for each TSS/COD range is calculated based on mid-point loading of the range.

Wastewater charges for Commercial/Industrial users discharging greater than 25,000 gpd of flows are calculated individually based on cost of service unit rates. The cost of service unit rates are as follows: Flow - $2.1403 per hcf, TSS - $0.3652 per lb and COD - $0.1303 per lb. The total monthly charges are computed using these unit rates and include a monthly base fee of $9.93.

Rate Impact

The main objective of this Study is to ensure a fair and equitable allocation of costs to all the user classes in proportion to their demand for wastewater services. The combination of changes proposed, including user reclassification, introduction of COD and the establishment of uniform base fee provide for a fair and equitable allocation of costs among the City's user classes.

The cost of service analysis indicates that under the existing method where the allocations and rate structures are based only on Flow and TSS parameters, some users have been paying less than their fair share while others have been contributing more than their fair share. This study, which incorporates the COD parameter in both the allocation of costs and in the design of rate structures, reassigns revenue requirements among the various user classes so as to facilitate fair and equitable cost recovery.

The impacts discussed in this paragraph compare the March 2002 rates under the existing and proposed rate structure. All SFR users will benefit under the new rate structure. The degree of benefit varies depending on the winter water usage from 3 percent to 24 percent. MFR accounts with usage lower than 67 hcf per month will experience increases in their sewer service charges due to the impact of a substantially higher base fee. Commercial/industrial user class revenue may increase or decrease depending on discharge strength and volume. While the proposed changes lead to increases in wastewater charges for some users and decreases for others, they ensure a fair and equitable allocation that is proportionate to use. In addition, all aspects of the Study including identification and aggregation of O&M and capital costs, classification of users, allocation of costs and the development of rate structures conform to the revenue program guidelines set forth by the SWRCB.

Capacity Fees

Capacity (developer) fees are one-time fees used to recover some or all of the cost of providing the system capacity required when a new user connects to the wastewater system. Examples of such costs include those related to increasing transmission and treatment capacity in treatment plants, ocean outfalls, interceptors, pumping stations, and sewer mains.

The City currently charges $2,500 per equivalent dwelling unit (EDU) or SFR. The minimum capacity assigned to any sewer connection is one EDU. MFR units having individual, City-read water meters are assigned one EDU per unit, while MFR units that share a common water meter are charged based on a density-adjusted formula. Non residential customers are charged based upon the number of fixture units by using a conversion factor that equates 20 fixture units to one EDU.

The City has incurred major costs over the last ten years to upgrade facilities and will continue to incur additional costs to comply with EPA mandates to meet discharge requirements. The growth-related portion of these past and future costs of improvements and upgrades to the City's facilities form the basis of the calculated capacity fee. The capital costs the City has incurred prior to 1997 (some of these costs dated back to 1992 and before) and the future costs to be incurred over the next ten years were reviewed. The projects associated with these capital costs were examined and the net capacity available from these projects was determined in order to derive the capacity fee. These projects include sewer mains, pumping stations, treatment plant upgrades, outfall costs etc. The resultant near-full-cost-recovery capacity fee is $5,349 per EDU.

The City may also wish to consider adding an incremental amount to recover the growth-related portion of system infrastructure costs for facilities constructed prior to 1992. A very conservative engineering estimate for these primary treatment, collection and disposal facilities would be $2 per gallon per day (gpd). This adds another $560 to the calculated capacity fee, yielding a full-cost-recovery capacity fee of $5,909 per EDU.

Implementation of the higher capacity fees discussed above results in additional capacity fee revenue of $11.3 million to $13.5 million in FY 2003, depending on the option implemented. Since these additional dollars would replace funds that would otherwise be supplied by current system users, a one-time reduction in user fee revenue requirement of between 5.7 to 6.8 percent for all customer classes could be provided in FY 2003. In summary, the Council-adopted FY 2003 rate increase of 7.5 percent would be offset by the rate reduction made possible by the higher capacity fees, resulting in a smaller net rate increase of only 1.8 to 0.7 percent.

Section 2
Introduction

BACKGROUND

The City retained Black & Veatch to conduct a comprehensive cost of service and rate design study to establish a fair and equitable system of user charges for the City's retail wastewater service. This report documents the findings, analyses, results and recommendations of the Study.

The City owns and operates a regional wastewater system that provides wastewater collection, conveyance and treatment services to the City and a number of Participating Agencies (PAs) outside the City. The City operates the regional wastewater system under the federal National Pollutant Discharge Elimination System (NPDES) permit that stipulates standards of discharge. To comply with the discharge standards and to meet other requirements of the Environmental Protection Agency's (EPA) Clean Water Act, the City had to undertake various capital project initiatives including the enhancement of existing wastewater treatment facilities and the construction of new tertiary wastewater reclamation facilities. The City operates the wastewater system as a self-supporting enterprise and costs are accounted for separately under the wastewater enterprise fund.

To minimize the impact of the capital project initiatives on the users of the City and its PAs, the City has been, and is financing its capital projects in part via a combination of federal loans and grants which are administered by the State Water Resources Control Board (SWRCB). As a recipient of various federal grants and state loans, the City is obligated to comply with SWRCB's Revenue Program Guidelines. *The guidelines require that recipients of state-administered grants and/or loans establish a system of user charges that recovers operating and capital costs from users on a basis proportionate to use.* The guidelines specifically require a fair and equitable apportioning of costs based on each user class's contributions of flow and strength of wastewater pollutants discharged.

To comply with the revenue program guidelines, the City conducted a review of cost of service and developed a strength-based billing method to allocate costs among the various PAs and the City. The strength-based billing procedure, which is based on flow and the strength parameters of Total Suspended Solids (TSS) and Chemical Oxygen Demand (COD), was approved by the SWRCB in 1998. The PAs are currently billed based on their contribution of flow, TSS and COD as per the terms outlined in the service contracts between the City and the PAs.

However, the user charge system that is applied within the City's municipal service area is presently based only on Flow and TSS and does not include the COD parameter. Consistent with revenue program requirements, SWRCB is mandating that the City modify its existing cost allocation basis and include the COD parameter in its rate structure. Therefore, the City requested a comprehensive cost of service study that includes a review of City's projected revenue requirements, allocation of costs to strength and flow parameters, development of unit costs and design of rate schedules for the various user classes.

OBJECTIVES

Several interrelated objectives need to be considered in the development of a financial plan and in the design of rates. This being the case, judgement plays a role in the final design of rate structures and rates. The major objectives of the study are:

- Ensure *Revenue Sufficiency* to meet the operation and maintenance (O&M) and capital costs of the City's wastewater enterprise
- Plan for *Revenue Stability* to provide for adequate operating and capital reserves and the overall financial health of the wastewater enterprise
- Maintain good *Financial Ratings* by providing for a stable and reliable financial position so that debt issuance can be achieved at the lowest cost
- Ensure *Fairness and Equitability* in the development of a system of user charges
- Minimize *Rate Shock* to reduce financial hardship on the different user classes
- Enhance *Public Understanding of the Rate-Setting Process* through stakeholder participation
- Ensure *Compliance* with regulatory requirements of the SWRCB

SCOPE OF THE STUDY

The scope of this study involves the determination of *Wastewater User Rates* through a comprehensive cost of service and rate design study, determination of *Capacity Fees* and obtaining the approval of the SWRCB. While User Rates facilitate the generation of adequate revenues to meet routine annual O&M and capital expenditures including debt service, Capacity Fees ensure that new users pay their fair share of costs so that existing users are not burdened with providing capacity for new users.

The comprehensive cost of service and rate design component includes three major processes. Figure 2-1 provides a graphical representation of the various steps involved in the comprehensive cost of service and rate design process. The three major processes are as follows:

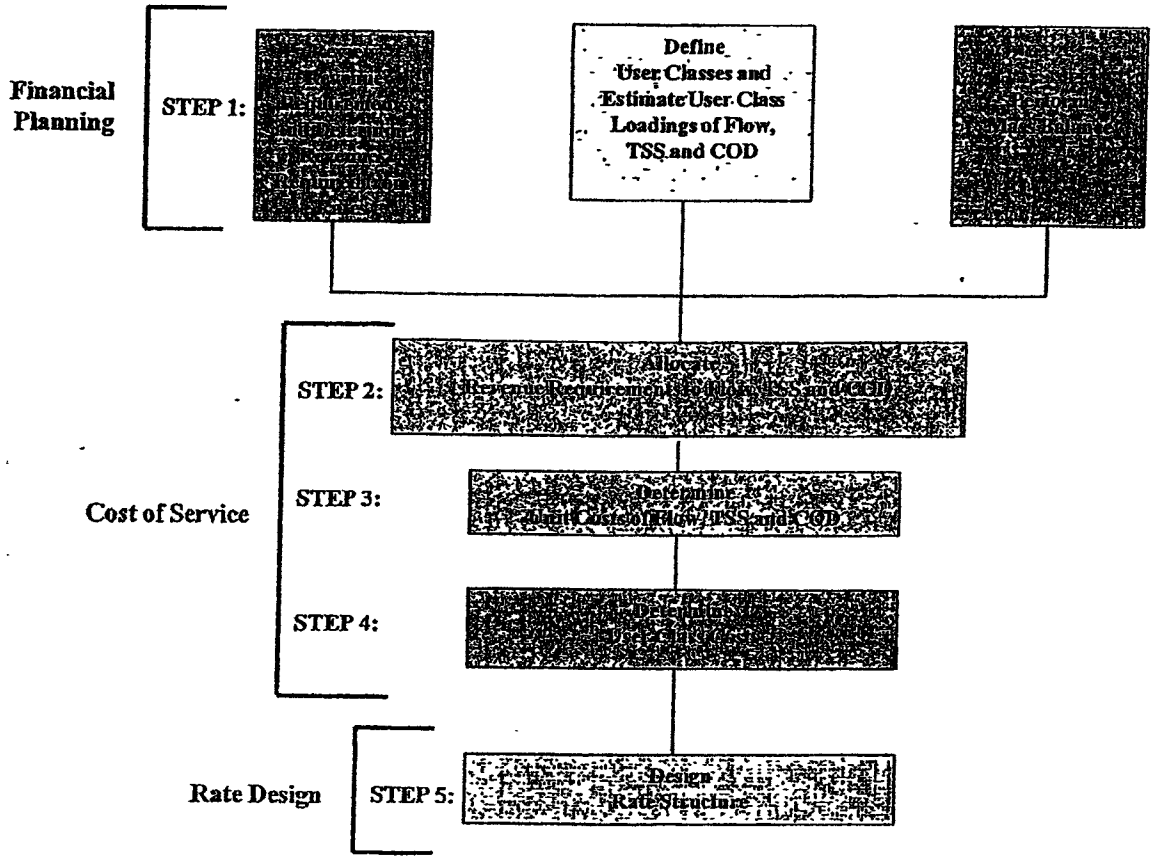
- **Financial Planning:** Revenue requirements are projected for a five-year period from FY 2002 through FY 2006. Financial planning involves estimation of annual O&M and capital expenditures, annual debt service and reserve requirements, operating and capital revenue sources and the determination of required annual user revenues from rates and charges. User classification, annual user loadings estimation for the selected wastewater parameters, and mass balance are also performed concurrently.

- **Cost of Service:** Cost of Service involves the apportioning of annual revenues required to the different user classes proportionate to their contributions of flow, TSS and COD to the wastewater system.

- **Rate Design:** Rate Design involves the development of a fixed and variable schedule of rates for each of the different user classes to equitably recover the costs attributable to them.

The Capacity Fee development component includes the determination of wastewater infrastructure capacity and the associated costs required to accommodate new growth, and the design of one-time capacity fees for the different classes of new users.

FIGURE 2-1 COST OF SERVICE / RATE DESIGN PROCESS



ASSUMPTIONS USED IN THE STUDY

Following are the assumptions used in the study:

1. Annual O&M and capital expenditures, annual revenues from the PAs, other revenue sources and reserve requirements, O&M inflation factors and user account growth projections are all based on the City's Fiscal Year 2000 *Rate Case*.

2. Annual average wastewater system Flow and TSS/COD concentrations used in the Mass Balance

Analysis are based on the Metropolitan Wastewater Department (MWWD)'s annual report on projected flows and strength. The data used in the Study is from the *Projected Flow and Strength Report (FY 2000)*.

3. TSS strength assignment for the different user classes is based on the MWWD Sewer Classification Program's *Standard Industrial Classification (SIC) Guidelines List.*

4. COD strength assignment for the different commercial/industrial SIC classes is based on Black & Veatch judgement, and past sampling study results data from *Los Angeles County Sanitation District (LACSD), City of Los Angeles (LA)* and *SWRCB Guidelines.*

This Study report includes six sections besides the Executive Summary and the Introduction. Sections 3, 4 and 5 cover the ***financial planning*** phase, section 7 explains the ***cost of service*** and section 8 describes the ***rate design*** phase. A brief description of each section follows.

- *Section 3* describes the regional wastewater system operated by the City under the auspices of Metropolitan Wastewater Department (MWWD) and the relationship between the City and the PAs. Current rates are included here.

- *Section 4* describes the existing and proposed user classifications. In addition, this section presents a discussion on wastewater flow estimation and strength assignment for the different residential and commercial/industrial classes, and on the mass balance analysis.

- *Section 5* includes a discussion on wastewater system revenues and expenditures, capital program financing including debt service, required annual revenue adjustments and the determination of annual revenues required from user rates.

- *Section 6* identifies the major issues that are addressed in this Study and presents a discussion on each of the different issues. This section also provides a brief description of the stakeholder group involvement and their contributions to the Study.

- *Section 7* includes a detailed discussion on the allocation of costs to wastewater parameters, determination of projected user class loadings and the determination of unit costs.

- *Section 8* presents a discussion on the proposed rate structure. This section also includes a detailed discussion on the merits of the proposed rate structure and the expected impact on the different user classes.

- *Section 9* describes the methodology used in determining capacity fees for a single family residence.

Section 3
Wastewater System

This section of the report presents a brief overview of the regional system, the relationship between the City and its PAs that discharge to the regional system and the City's existing retail rate structures.

REGIONAL WASTEWATER SYSTEM

A brief description of the City's regional wastewater system and the relationship between the City and the PAs that discharge to the regional system is presented in this sub section.

Regional System Infrastructure

The City-owned regional wastewater system includes both the Muni System and the Metro System. The Muni system is primarily a sewage collection system that serves the City's service area and includes trunk lines, collector mains, pump stations and stormwater interceptor pump stations. The Muni system also includes the San Pasqual Water Reclamation Plant, which has a production capacity of 1 mgd of reclaimed water.

The Metro system infrastructure currently includes two wastewater treatment plants that are operational, one wastewater treatment plant that is under construction, two ocean outfalls, a biosolids processing center, two major pump stations and several miles of force mains and gravity flow interceptors. A brief description of some of the major Metro System facilities is provided below.

Point Loma Wastewater Treatment Plant (PLWTP): The PLWTP is the principal treatment facility in the Metro system, with a permitted treatment capacity of 240 mgd of average daily flow. The PLWTP provides advanced primary treatment. The plant currently achieves a TSS removal rate of nearly 85-87 percent through the use of enhanced chemical treatment and Bio-Chemical Oxygen Demand (BOD) removal of 58 percent. In the future, PLWTP is to receive raw solids from the South Bay Water Reclamation Facility (SBWRF) when it becomes operational.

North City Water Reclamation Plant (NCWRP): The NCWRP provides tertiary treatment and has a permitted capacity of 30 mgd of average daily flow and produces about 3.3 mgd of reclaimed water. The non-usable effluent from this plant is conveyed to the PLWTP and the solids from NCWRP are processed at the Metropolitan Biosolids Center (MBC). The City was required to construct the NCWRP and the SBWRF as a condition of EPA's waiver from secondary treatment at PLWTP.

Point Loma Plant Ocean Outfall (PLOO): The Point Loma Plant Ocean Outfall is a 4.5 mile long outfall that discharges treated sewage effluent at a depth of 320 feet of water. Currently, all of the treated effluent from the regional system is discharged through this outfall.

Metropolitan Biosolids Center (MBC): The MBC provides state of the art sludge processing. The facility receives raw sludge from NCWRP and digested sludge from PLWTP and after processing returns the centrate to PLWTP.

The PLWTP, NCWRP, SBWRF (that is under construction), the South Bay Ocean Outfall, and MBC are all parts of an integrated regional system. Due to the complex exchange of effluents, solids and centrates, sharing of one common outfall and receipt of flows from the participating agencies, the Metro System is viewed and operated as "a regional system" from a permitting, regulatory compliance and operational efficiency standpoint. The City as the owner and operator of a regional system holds a NPDES permit that stipulates discharge limitations. Currently, as per the NPDES permit requirements, a Mean Monthly TSS Removal percentage greater than or equal to 80%, and a Mean Annual BOD Removal percentage greater than or equal to 58% apply to the undiluted effluent discharged through the PLOO. The percentage removal rates are calculated on a system-wide basis.

Relationship between the City and Participating Agencies

The Metro system provides "wholesale" treatment services including some conveyance, treatment and sludge disposal operations to the City and 15 PAs that are outside the City's jurisdiction. Services to the PAs are provided pursuant to the terms of the Regional Wastewater Disposal Agreement, which expires on December 31, 2050. The PAs and the City are responsible for sewage collection operations within their own respective jurisdiction, and for the conveyance of the collected sewage through trunk lines to the Metro system. Some of the key provisions of the Regional Wastewater Disposal Agreement are as follows:

- The City has full ownership and rights of operation of the Metro system.
- The PAs pay for the services through a system of Sewer System Charges, Existing Capacity Charges and New Contract Capacity Charges. The Sewer System Charge is an annual full cost recovery – based calculation which takes into consideration both the flow and strength of the wastewater conveyed to the Metro system.
- The PAs' share of facilities expansion costs is determined based on the *proportion* of flows received and strength of the flows.
- The PAs' share of Metro O&M costs are based on their *proportionate* flow into the Metro system and the strength of their wastewater.
- The City determines the Sewer System Charge unit rates by allocating net O&M and capital costs among parameters of Flow, COD and TSS based on the approved Functional-Design Methodology of allocation.

EXISTING RATE STRUCTURE

The City's existing wastewater rate structures for the SFR, MFR and Commercial/Industrial user classes include a fixed Base Fee and a Usage Rate. While the base fee is charged to each water meter, the usage rate is applied to a user's water usage. The City's existing rates for the various user classes are included in [redacted]

Base Fee

In the existing rate structure the base fee varies by user class. The MFR and commercial/industrial users have the same monthly base fee of $0.51 per meter. SFR users have a much higher monthly base fee of $8.77. These fees were effective as of March 1, 2001.

Usage Rate

The usage rate for all user classes is based on the volume of wastewater flow and the strength of TSS. The existing rate structure does not bill for the organic content (COD) of wastewater. The usage rate varies by user class. The usage rates for SFR, MFR and Commercial/Industrial user classes are discussed below.

SFR Usage Rate: The current SFR usage rate effective as of July 1, 2001 is $3.0481 per hcf of water usage. This usage rate is established based on a 100 percent return of annualized winter water usage and a TSS strength of 275 mg/l. SFR users are billed based on a computed 30-day average winter month water usage. The 30-day average winter months' water usage is set on July 1 of each year, based upon the SFR user's average water consumption during the previous winter months of December through March. Once an SFR user's monthly sewer charge is established, it remains in effect until the beginning of the next fiscal year.

In the existing rate structure, the 30-day average winter water usage that is used to establish bi-monthly sewer charges is capped at 10 hcf to compensate for landscape irrigation usage which occurs even during winter. This means that if a user's 30-day average winter water usage exceeds 10 hcf, then the usage rate is applied only to the first 10 hcf of consumption, and the usage in excess of 10 hcf is not billed. New users who do not have a winter water usage history pay a flat bi-monthly charge until their winter water usage is established.

Under the existing rate structure the maximum bi-monthly sewer charge including base fee that a SFR user can be charged is $78.50.

MFR Usage Rate: The current MFR usage rate effective as of March 1, 2001 is $2.71 per hcf of water usage. This usage rate is applied to MFR user's actual monthly water usage. The usage rate is established based on a 95 percent return to sewer and a TSS strength of 275 mg/l. Return to sewer is the percentage of water usage that is returned to sewer as wastewater.

Commercial/Industrial Usage Rate: The current Commercial/Industrial usage rates are based on percent of water returned to sewer and the strength of TSS. Commercial/industrial users are classified based on Standard Industrial Classification (SIC) code and are assigned TSS strengths and percent return to sewer that are characteristic of their type of business. The existing rate schedule is in the form of a 10x20 TSS/Return to Sewer matrix with 200 user rates. The rate applied to a user's monthly water usage depends on the user's TSS strength and percent return to sewer. The commercial /industrial user matrix is included in [redacted]

Rates for Commercial/Industrial users that have TSS strengths greater than 1,000 mg/l, are computed individually and adjusted for percent return to sewer. Rates are computed on the basis of $2.100 per hcf of flow, and $0.272 per 100 mg/l of TSS.

While there are exceptions, most of the City's users are billed bi-monthly on a combined water and sewer bill.

Section 4
User Classification and Loadings

One of the major tasks in the cost of service and rate design process is the classification of the users of the wastewater system and the determination of annual flows and wastewater loadings (TSS, COD and other wastewater constituents) associated with each class. The existing and proposed classification of the City's users, the estimation of wastewater flows and loadings for each of the proposed user classes and the mass balance analysis are discussed in this section of the report.

SEWER USER CLASSIFICATION

In addition to the 15 PAs, who are the City's "wholesale" users, the City's wastewater enterprise has a mix of "retail" users within the City's service area. The City's retail users primarily comprise regular water/sewer, sewer only and the Department of Navy users. Since the focus of this Study is the City's retail users, discussions on sewer user classification relates exclusively to the users within the City's service area and henceforth these users are referred in this report as "City's Users". A review of the City's existing user classifications, and the proposed changes to the classifications are discussed in the following subsections.

Existing City User Classifications

The City currently serves a population of nearly 1.28 million within the City's service area. As per FY 2000 estimate the City has a total of 259,340 sewer accounts. The breakdown of the City's sewer user classes and the number of accounts associated with each class as of FY 2000, are as follows:

User Class Description	Number of Accounts
Single Family Residential (SFR)	214,860
Multiple Family Residential (MFR)	29,140
Commercial/Industrial	15,340

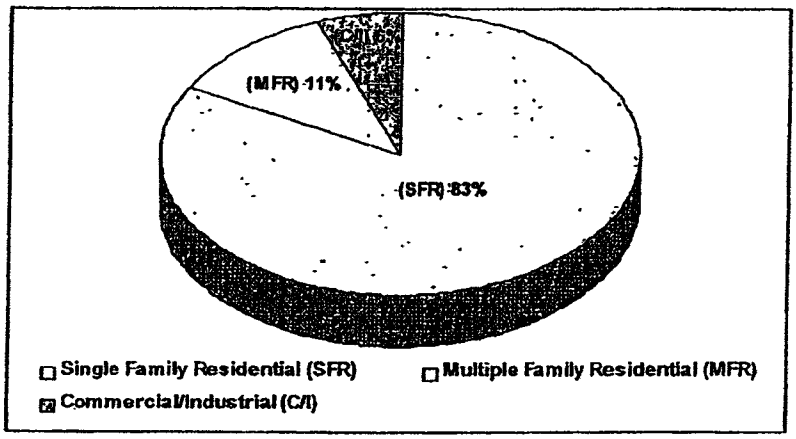
The percentage distribution of the accounts is shown in Figure 4-1. Residential accounts comprise 94% of the total sewer user accounts serviced.

Residential Classification: The City's residential users are classified into SFR and MFR classes. The residential classes are homogenous in that all the users have the same TSS and COD strengths. However, the volume of flows can vary among the users depending on water usage. The residential users are classified into SFR and MFR since they differ in their water usage characteristics. SFR water usage includes significant irrigation usage whereas MFR water usage includes very low irrigation usage.

Commercial/Industrial Classification: Typically, there is significant variability in both the volume of wastewater flows and wastewater strengths, among the different types of commercial/industrial users such as food service establishments, retail stores, and supermarkets. Therefore, to ensure fair and equitable determination of wastewater service charges, the City has developed a commercial/industrial user class matrix based on the two variables of TSS concentration and percent return to sewer.

Commercial/Industrial users with a TSS concentration of greater than 1,000 milligrams per liter (mg/l) are considered as large users and as mentioned in Section 3, their rates are computed individually. The commercial/industrial user classification is discussed further in Section 6.

FIGURE 4-1 – DISTRIBUTION OF SEWER USER ACCOUNTS
(FISCAL YEAR 1999-2000)



Proposed User Classifications

Black & Veatch recommends that the City's users be grouped into four broad user classes: SFR, MFR, Commercial/Industrial with [- 25,000 gpd discharge, and Commercial/Industrial with > 25,000 gpd discharge. No changes are proposed for the City's SFR and MFR classes. However, we propose changes to the City's Commercial/Industrial user classification in order to be consistent with the SWRCB user classification guidelines and to accommodate the required incorporation of COD parameter in the proposed rate structure.

Commercial/Industrial Classification: In the proposed user classification, the City's commercial/industrial users are classified into two groups:

- Commercial/Industrial users that discharge greater than 25,000 gpd of wastewater flows
- Commercial/Industrial users that discharge less than or equal to 25,000 gpd of flows.

The classification of commercial/industrial users with greater than 25,000 gpd of wastewater discharge is consistent with the SWRCB user classification guidelines. The guidelines stipulate that costs must be allocated individually to large commercial users discharging more than 25,000 gpd.

In the proposed user classification scheme, the City's commercial/industrial users, other than the large commercial users, are further classified using a *user class matrix* that is based on TSS and COD wastewater parameters instead of the current TSS/Return to Sewer variables. The return to sewer percentage in the proposed classification would be directly applied to each user's metered water consumption (to estimate wastewater flows) during sewer bill computations.

WASTEWATER FLOW ESTIMATION

In order to perform a cost of service analysis, wastewater flow needs to be estimated and projected for each user class. Wastewater flow is not measured for a vast majority of users because of cost and/or technology concerns. Typically, flows are estimated based on winter water usage for SFR users and as a percentage return of water usage for MFR and most Commercial/Industrial users. Actual wastewater flow is measured for only a few commercial/industrial users.

Residential Class

Black & Veatch reviewed the methods that the City currently uses to estimate annual wastewater flows for the residential class. The City currently uses annualized winter water usage with a usage cap of 10 hcf to estimate wastewater flows for the SFR users and actual monthly water usage to estimate wastewater flows for the MFR users. The methods used in estimating wastewater flows differ between SFR and MFR users due to the differences in their water consumption patterns.

SFR Wastewater Flow Estimation: SFR water consumption includes two types of water usage: domestic use (water used inside the home) and irrigation use (water used in the yard). While the level of domestic water usage is expected to remain fairly stable throughout the year, fluctuation in irrigation usage could occur due to seasonal changes, which in turn causes significant variations in water usage during the year. Irrigation usage is at its minimum levels during the winter period and therefore the water used during the winter period can be associated with domestic usage. Typically, domestic water returns to the sewer system and irrigation water does not. Therefore, for SFR users it is appropriate to use annualized *winter water usage* as a direct approximation of annual wastewater flows returned to the sewer. The four-month period from December through March is deemed as the SFR winter water usage period.

In San Diego, weather conditions are moderately dry even during winter months, which would result in some level of irrigation water use even during the winter period. To account for winter irrigation usage that does not return to the sewer, the City currently has set a usage cap of 10 hcf per month in estimating and billing annual SFR wastewater flows. The usage cap limits the level of water consumption that is included in sewer billing. Any water usage beyond the usage cap level is deemed as not being returned to the sewer and hence is not included in sewer billing. Black & Veatch performed an analysis that indicates a need for a higher usage cap than the current 10 hcf level. Based on that analysis and feedback obtained from the stakeholder group, we propose a SFR usage cap of 14 hcf instead of the current 10 hcf. The issue of SFR usage cap is discussed in greater detail in Section 6.

MFR Wastewater Flow Estimation: MFR water consumption relates predominantly to domestic use with very little or no irrigation use since most MFR complexes have small green areas. MFR

complexes with very large green belts are likely to have separate irrigation water meters. Therefore, MFR water usage levels remain relatively stable throughout the year and it is appropriate to use actual monthly water usage in estimating wastewater flows. However, MFR complexes do have some minimum irrigation usage, which does not return to the sewer, and therefore generally the City estimates MFR annual wastewater flows to be 95 percent of their annual water usage.

Commercial Class

Wastewater flows for the commercial/industrial users are estimated based on actual monthly water consumption. Water usage patterns vary significantly among the different types of commercial/industrial businesses and therefore the City typically assigns to each user a percent return to sewer. Users whose return to sewer varies significantly from what has been assigned can take advantage of an appeals process to have the return to sewer factor and usage rate reduced.

TSS/COD STRENGTH ASSIGNMENT

The City's existing sewer user classification and rate structures are based on wastewater flows and TSS concentrations. The City currently assigns TSS strengths to the different classes of commercial/industrial users based on SIC codes. The City's Sewer Classification Program Industrial Classification Guidelines List is included as [redacted]. No changes were made to the existing TSS assignments.

Since the proposed rate structure needs to include the COD parameter, Black & Veatch assigned COD strengths based on SIC codes to the different types of commercial/industrial users. A list of SIC codes with the corresponding proposed TSS and COD strengths is included in Appendix 4-2. The COD assigned to the different SIC codes is based on past sampling studies data from the Los Angeles County Sanitation District (LACSD), City of Los Angeles (LA) and SWRCB guidelines. BOD data was obtained from these sources and was then converted to COD strengths by applying a conversion factor of 2.

MASS BALANCE ANALYSIS

Black & Veatch used the historical FY 1999 water consumption as the base data to estimate annual wastewater flows and TSS/COD loadings for all user classes. The use of reliable data is critical since these historical flows and loadings are used to project future user class annual flows and strength loadings. Projected flows and loadings are later used in the cost of service analysis (to derive the unit costs of service and user class costs). A mass balance analysis is usually performed to verify the appropriateness of the estimated flows and loadings.

Mass balance is the process of matching and reconciling calculated total annual flows and strength loadings in pounds with the quantities actually received at the treatment facilities. The mass balance analysis takes into consideration other non-user flows such as the infiltration & inflow (I&I) flows that get into the sewer system. I&I flows refers to water other than wastewater that enters a sewer system from other sources including cracked sewer mains, manholes and sewer vents. Variances

between the actual flows and loadings received at the treatment facilities and the calculated historical flows and loadings are usually reconciled against the SFR flows and loadings since the flows and loadings from that user class can be compared against industry standards.

The City's share of total annual average flows including I&I flows for FY 1999 is estimated at 119 mgd of which 2 mgd is the estimated I&I flow. When the calculated annual City flow and loadings were compared with the actual City share (net of I&I) received at the treatment facilities, the analysis indicated a 3.7 percent variance. The calculated flows were higher than the actual City's share of flows received.

The City's measured annual average TSS and COD strengths are 269 mg/l and 610 mg/l respectively. The mass balance analysis on loadings indicated that calculated TSS was 1.2% higher than measured TSS. The calculated COD was 7.3% higher than measured COD.

Black & Veatch adjusted the City's average annual SFR flow estimate from 55 mgd to 50.5 mgd. Similarly, the City's SFR TSS strength estimate was reduced from 275 mg/l to 265 mg/l and the SFR COD estimate was reduced from 550 mg/l to 450 mg/l. With these adjustments to the historical SFR estimates of flows and loadings, Black & Veatch was able to reconcile the variances and achieve a reliable mass balance as presented in the mass balance summary in Table 4-1.

TABLE 4-1 MASS BALANCE ANALYSIS SUMMARY

DESCRIPTION	WASTEWATER FLOW (HCF/YR)	TSS LOADINGS (LBS/YR)	COD LOADINGS (LBS/YR)
Total Calculated City User Flows (HCF/Year)	58,947,931	98,975,653	226,185,436
Estimated City User Flows not discharged to City Facilities	1,854,278	3,104,061	6,208,123
Net Calculated City Flows (HCF/Year) (1)	57,093,653	95,871,592	219,977,313
City's Actual 1999 Flows into the plant (HCF/Year)	58,068,182	96,846,114	219,613,864
City's Estimated 1999 I&I (HCF/YR)	975,936	544,572	726,096
City's Actual 1999 Loadings net of I&I Flows (HCF/YR)	57,092,246	96,301,542	218,887,768
VARIANCE ANALYSIS OF ANNUAL FLOWS AND LOADINGS			
Variance between actual and calculated (HCF/YR or LBS/YR)	1,406	-429,950	1,089,545
Variance between actual and calculated (%)	0.0025%	-0.45%	0.50%

(1) Mass Balance perfomed based on calculated annual wastewater flow generation of all user classes.

ANNUAL WASTEWATER FLOWS AND LOADINGS PROJECTION

Annual wastewater flows and TSS/COD loadings need to be projected for each user class to determine

each user class' cost of service and sewer rates. A brief discussion on the method used in estimating user class flows and loadings for FY 2002 follows. User class flows and loadings are projected for the fiscal year, for which cost of service allocations are made and rates are calculated. In this Study, cost of service analysis and rate design is performed for FY 2002.

Table 4-2, summarizes the historical and projected average number of customer accounts and annual wastewater flows for FY 2001 to FY 2005. The projection of customer accounts shown in Table 4-2, is based upon the assumption that annual growth for most of the City's user classes will continue at the rate of one and one-half percent and there will be no increases in the government users.

TABLE 4-2 HISTORICAL AND PROJECTED NUMBER OF ACCOUNTS

User Class Description	Growth Rate	# Accounts FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Water/Sewer - SFR	1.50%	203,611	206,665	209,765	212,912	216,106	219,348	222,639
Water/Sewer - MFR	1.50%	28,038	28,459	28,885	29,319	29,759	30,205	30,658
Water/Sewer - Commercial/Industrial	1.50%	13,711	13,917	14,125	14,337	14,552	14,770	14,992
Sewer Only - SFR	1.50%	7,623	7,737	7,853	7,971	8,091	8,212	8,335
Sewer Only - MFR	1.50%	305	310	314	319	324	329	334
Sewer Only - Commercial/Industrial	1.50%	284	288	293	297	301	306	311
Gov/Mil - SFR	0.00%	458	458	458	458	458	458	458
Gov/Mil - MFR	0.00%	372	372	372	372	372	372	372
Gov/Mil - Commercial/Industrial	0.00%	988	988	988	988	988	988	988
Water/Sewer Very Large Users (Comind)	1.50%	110	112	113	115	117	119	121
Govt./Mil. Very Large Users	0.00%	35	35	35	35	35	35	35
Total		255,535	259,340	263,202	267,123	271,103	275,142	279,243

The wastewater flows and loadings for FY 2002 for each user class are estimated based on the projected increase in the number of accounts and the current annual wastewater flow and loadings. Wastewater flows are projected to increase proportionately with growth. A summary of projected estimates of user class wastewater flows and loadings is shown in Table 4-3.

TABLE 4-3 PROJECTED FY 2002 WASTEWATER FLOWS AND LOADINGS

User Class Description	Annual Wastewater Flows FY 2002 (HCF)	Annual TSS Loadings FY 2002 (LBS)	Annual COD Loadings FY 2002 (LBS)
Single Family Residential	24,955,925	41,006,578	69,915,241
Multiple Family Residential	18,116,067	29,576,749	50,753,048
Commercial/Industrial (< 25,000 gpd discharge)	9,654,784	19,410,018	48,374,123
Commercial/Industrial (> 25,000 gpd discharge)	6,782,952	9,980,078	60,297,945
Total	59,509,728	99,973,423	229,340,357

Section 5
Revenue Requirements

A review of a utility's revenue requirements is a key first step in the rate design process. The review involves an analysis of annual operating revenues under existing rates, capital revenues, O&M and capital expenditures, transfers if any between operating and capital funds, and operating and capital reserve requirements. This section of the report provides a discussion of the projected revenues, O&M and capital expenditures, capital improvement financing plan, debt service requirements, and the revenue adjustments required to ensure the financial stability of the wastewater enterprise. The wastewater system revenues and expenditures are discussed from a regional system perspective and the discussion on required revenue adjustments relates exclusively to the City's users.

SYSTEM REVENUES

The City's Metropolitan Wastewater Department (MWWD) operates the regional wastewater system. The City derives its required annual operating and capital revenues from a number of sources. The principal sources of operating revenues are the sewer service charges from the City's users and the full cost recovery revenues from the PAs per their cost sharing agreement with the City. Other revenue sources include miscellaneous operating revenues such as Shipboard Waste and Trucked Waste Revenues and other non-operating revenues including revenue transfers from the rate stabilization fund. Capital revenue sources include sewer connection fees, capital funds, bond proceeds, state and federal grants & loans, capacity fees from the City and the PAs, pay-as-you-go revenues from the PAs, and interest earnings.

Black & Veatch reviewed the various sources of operating and capital revenues and the City's financing plan. Table 5-1 presents the details of the operating and capital related revenues including the City and PA user and capital revenues. The footnotes explain the basis for the revenue projections during the study period. The table however does not reflect other available revenues such as interest earnings, rate stabilization transfers, bond proceeds and capital grant monies. The comprehensive operating and capital flow of funds statements presented at the end of this section includes all those other revenues.

SYSTEM EXPENDITURES

To provide for the continued operation of the City's regional wastewater system on a sound financial basis, the revenues generated must be sufficient to meet the revenue requirements or cash obligations of the system. Revenue requirements include O&M expenses, capital improvement program (CIP) expenditures, principal and interest payments on existing debt, and other obligations. The wastewater enterprise's annual expenditures include two major components: the Muni and the Metro. Muni relates essentially to the collection system in the City's own retail service area and Metro relates to treatment and disposal services shared both by the City and the PAs.

The City's Financing Services Division annually receives O&M and capital expenditures information for the Metro component from MWWD. Financing Services incorporates these costs with the Muni annual O&M and CIP expenditures and develops comprehensive O&M and CIP cost projections for the entire wastewater enterprise as part of its annual "Rate Case" development.

TABLE 5-1 DETAILS OF PROJECTED OPERATING AND CAPITAL REVENUES

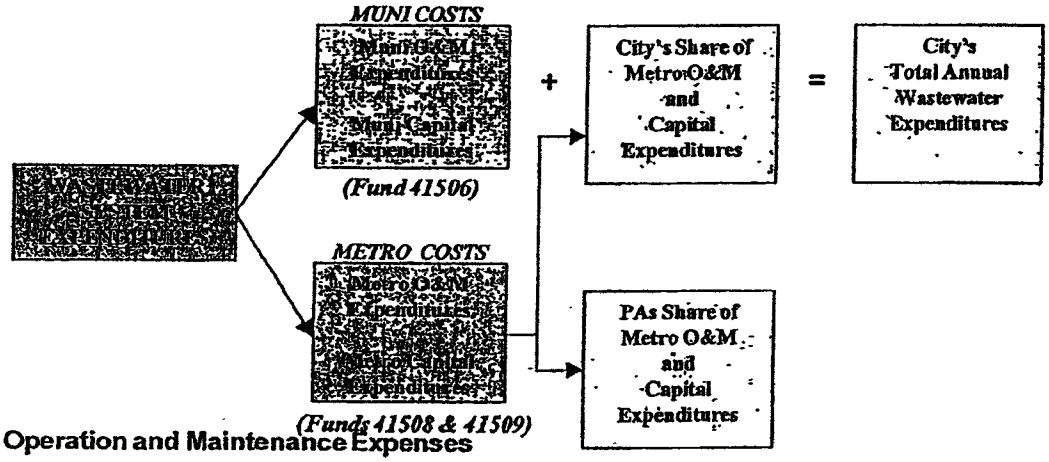
Description	2000 $	2001 $	2002 $	2003 $	2004 $	2005 $
City User Charge Revenues						
Single Family Residential Revenues (1)	67,697,000	72,296,000	73,380,000	74,481,000	75,598,000	76,732,000
MFR/Commercial/Industrial Revenues (1)	95,803,000	104,252,000	106,858,000	108,461,000	110,088,000	111,739,000
Total City User Charge Revenues	163,500,000	176,548,000	180,238,000	182,942,000	185,686,000	188,471,000
Revenues from PA's (Treatment O&M) (2)	22,273,000	24,554,000	26,004,000	26,876,000	28,408,000	29,638,000
Shipboard Waste	601,000	631,000	631,000	631,000	631,000	631,000
Other City Operating Revenues						
Treatment Plant Services Other (3)	812,000	844,000	878,000	913,000	950,000	988,000
Treatment of Tijuana Sewage (4)	760,000	402,000	0	0	0	0
O&M Muni (3)	755,000	694,000	722,000	751,000	781,000	812,000
Transportation Charges Muni (5)	210,000	210,000	211,000	211,000	212,000	213,000
Total Other Muni Operating Revenues	2,537,000	2,150,000	1,811,000	1,875,000	1,943,000	2,013,000
Other Non-Operating Revenues						
Services Rendered to Others (5)	1,556,000	1,618,000	1,683,000	1,750,000	1,820,000	1,893,000
Sale of Power from Co-Generation (5)	589,000	613,000	638,000	664,000	691,000	719,000
Other Revenues (6)	224,000	224,000	224,000	224,000	224,000	224,000
Total Non-Operating Revenues	2,369,000	2,455,000	2,545,000	2,638,000	2,735,000	2,836,000
Capital Related Revenues						
New Sewer Connections - City (7)	110,000	111,000	112,000	113,000	114,000	115,000
Capacity Charge Revenues - City (8)	8,535,000	8,963,000	9,409,000	9,881,000	10,375,000	10,893,000
Contributions in Aid - SRF (9)	27,402,000	31,684,000	7,923,000	0	0	0
Contributions in Aid from City Entities (10)	598,000	1,630,000	3,631,000	3,271,000	3,191,000	3,091,000
Pay-Go Revenues from PA's (11)	2,138,000	5,772,000	5,498,000	4,901,000	4,674,000	7,404,000
Capacity Charge Revenues - PA's	1,198,000	1,198,000	1,198,000	1,198,000		
Total Capital Related Revenues	39,981,000	49,358,000	27,771,000	19,364,000	18,354,000	21,503,000
Total System Revenues (12)	231,261,000	255,696,000	239,000,000	234,326,000	237,757,000	245,092,000

NOTE

(1) Based on a revenue growth rate of 1.5% for SFR, MFR and commercial/industrial users beginning FY 02.
(2) Operating revenues equal the operating expenditures allocated to the PA's and projected revenues are shown.
(3) FY 99-01 figures provided by Metro; Beyond FY 01 projected at the inflation rate of 4%.
(4) Assumes no sewage flows from Tijuana beyond FY 01 and consequently no revenues beyond FY 01.
(5) Projected year figures are based on an inflation rate of 4%.
(6) Figures are estimated to remain constant as per Metro.
(7) Muni's new sewer connections
(8) FY 00 figure based on a 5-yr rolling average estimate of EDUs.
(9) Based on SRF loans already approved.
(10) Figures provided by Metro.
(11) Based on Metro Allocations/Rate Case Calculations.
(12) Excludes interest earning, bond proceeds, prior balances and encumbrances.

The City maintains three types of O&M and CIP funds for the wastewater enterprise: Muni Fund (41506) for the Muni component and, Metro Existing Facilities Fund (41508) and Metro New Construction Fund (41509) for the Metro component. Figure 5-1 provides a graphical representation of the different components and the relationship between them. Discussions on the different components of the wastewater system expenditures follow.

FIGURE 5-1 COMPONENTS OF THE WASTEWATER SYSTEM EXPENDITURES



Operation and Maintenance Expenses

O&M expenditures include the cost of operating and maintaining wastewater collection, conveyance, treatment, and sludge disposal facilities. O&M Expenses also include costs incurred in providing technical services including laboratory services, cogeneration services, and other administrative and general costs of the wastewater system. These costs are a continuing normal obligation of the system, and are met from operating revenues as they are incurred.

The City is exclusively responsible for the Muni Fund 41506 annual O&M costs as they relate to the City's own retail service area. These Muni O&M expenditures include City's pumping and collection costs, treatment costs associated with the San Pasqual Facility, laboratory and other City's wastewater related administrative costs. Metro 41508 and 41509 O&M costs relate to the regional system operations shared by both the City and the PAs. Accordingly, the annual O&M costs of the Metro Funds 41508 and 41509 are allocated between the City and the PAs. These Metro annual O&M costs include:

- Metro pumping
- Metro treatment at PLWTP, NCWRP, MBC and minimum O&M costs associated with the SBWRF that is under construction
- Technical Services including Wastewater Chemistry and Biology/Ocean Operations
- Cogeneration
- Administrative and general costs including other City department services, data processing,

general accounting and clean water program administration

Black & Veatch reviewed MWWD's allocation of annual Metro O&M expenditures between the City and the PAs. In deriving the annual Metro O&M costs allocable to the PAs, MWWD first identifies the billable and non-billable O&M costs. Non-billable costs include costs associated with central support facilities and maintenance and these costs are the exclusive responsibility of the City. Billable O&M is that portion of Metro annual O&M costs that is shared between the City and the PAs.

In order to allocate billable costs between the City and the PAs, MWWD first allocates the total billable O&M costs to the three parameters of Flow, TSS and COD. The allocation, which is discussed in detail in Section 6, is based on a technical allocation study conducted in 1998. The parameter costs are in turn allocated between the City and the PAs in proportion to their contributions of Flow, TSS and COD. These costs allocated to the City are the basis of the City's budget.

The comprehensive forecasted annual O&M expenditures for the study are based upon the City's budgeted FY 2000 expenditures, adjusted for anticipated changes in operations and the effect of inflation in future years. The City conservatively uses an inflationary factor of four percent in projecting all O&M expenditures. The City's projections of annual regional wastewater O&M expenditures are in the range of $173 - $198 million during FY 2001 through FY 2005. Table 5-2 presents the comprehensive annual O&M costs. As of FY 2001, O&M expenditures of Metro Funds 41508 and 41509 have been merged into one. Hence the amounts in Metro Existing (41508) non-billable and billable line items are indicated as zero for FY 2001 through FY 2005, and the amounts are included in the Metro fund 41509 projections in Table 5-2.

The City's annual O&M expenditures, which include its own service area related Muni expenditures and its share of Metro annual O&M are presented in Table 5-3. The City's retail service area O&M expenditures, which are the focus of this Study, are estimated to be in the range of $148 to $168 million during FY 2001 through FY 2005.

Wastewater Capital Improvement Program

The City has developed a comprehensive wastewater CIP to address both the Muni and Metro wastewater system needs. The Muni system CIP projects generally include rehabilitation or replacement of sewer trunk lines and interceptors, upgrade or expansion of pump stations and San Pasqual Facility related projects. The Metro CIP projects include:

- PLWTP site improvements, plant upgrades and outfall upgrades
- NCWRP effluent pipelines, sludge processing, cogeneration
- SBWRF plant, sludge processing, and conveyance
- South Bay ocean outfall
- MBC sludge processing
- Metro Operations Center and other Metro projects

TABLE 5-2 PROJECTED REGIONAL WASTEWATER O&M EXPENDITURES

Description	Projected (Calculated) 2001 $	2002 $	2003 $	2004 $	2005 $
CITY OF SAN DIEGO					
Collection					
O&M (Non-Contract Metro) Pumping	3,496,617	3,539,617	3,582,617	3,627,617	3,672,617
Wastewater Collection	47,701,000	46,201,000	45,051,000	44,877,000	44,877,000
Total Collection	51,197,617	49,740,617	48,633,617	48,504,617	48,549,617
Total Collection (Inflated)	53,245,522	53,799,451	54,706,205	56,743,541	59,068,032
Treatment					
San Pasqual Water Reclamation Plant	3,013,383	3,013,383	3,013,383	3,013,383	3,013,383
Total Treatment	3,013,383	3,013,383	3,013,383	3,013,383	3,013,383
Total Treatment (Inflated)	3,133,918	3,259,275	3,389,646	3,525,232	3,666,241
Laboratory					
Environmental Monitoring & Tech Svcs.	4,955,516	4,696,516	4,696,516	4,696,516	4,696,516
Total Laboratory	4,955,516	4,696,516	4,696,516	4,696,516	4,696,516
Total Laboratory (Inflated)	5,153,737	5,079,752	5,282,942	5,494,259	5,714,030
Administration & General					
Non-Activity Related Items (Environmental Svcs.)	706,484	706,484	706,484	706,484	706,484
Other Expenditures	462,000	462,000	462,000	462,000	462,000
Total Administration & General	1,168,484	1,168,484	1,168,484	1,168,484	1,168,484
Total Administration & General (Inflated)	1,215,223	1,263,832	1,314,386	1,366,961	1,421,639
City's Share of Metro O&M Expenditures					
From Metro Existing (41508) - Non-Billable O&M	0	0	0	0	0
From Metro Existing (41508) - Billable O&M	0	0	0	0	0
From Metro New (41509) - Non-Billable O&M	24,775,000	25,626,000	26,526,000	22,905,000	24,005,000
From Metro New (41509) - Billable O&M	61,067,000	64,289,000	67,073,000	71,021,000	74,469,000
Total City's Share of Metro O&M Costs	85,842,000	89,915,000	93,599,000	93,926,000	98,474,000
Subtotal: City's O&M Expenditures	148,590,400	153,317,310	158,292,179	161,055,993	168,343,942
PARTICIPATING AGENCIES					
From Metro Existing (41508) - Billable O&M	0	0	0	0	0
From MetroNew (41509) - Billable O&M	24,554,000	26,004,000	26,876,000	28,408,000	29,638,000
Subtotal: PAs Share of O&M	24,554,000	26,004,000	26,876,000	28,408,000	29,638,000
TOTAL REGIONAL ANNUAL O&M	173,144,400	179,321,310	185,168,179	189,463,993	197,981,942

TABLE 5-3 BUDGETED AND PROJECTED CITY'S ANNUAL O&M EXPENDITURES

Description	Budgeted	Projected				
	2000	2001	2002	2003	2004	2005
	$	$	$	$	$	$
Muni Collection System	54,266,617	53,245,522	53,799,451	54,706,205	56,743,541	59,068,032
Muni Treatment - San Pasqual	3,013,383	3,133,918	3,259,275	3,389,646	3,525,232	3,666,241
Muni Laboratory	4,635,516	5,153,737	5,079,752	5,282,942	5,494,259	5,714,030
Muni Administration	706,484	1,215,223	1,263,832	1,314,386	1,366,961	1,421,639
City's Share of Metro O&M	83,019,000	85,842,000	89,915,000	93,599,000	93,926,000	98,474,000
Total: City's Annual O&M	145,641,000	148,590,400	153,317,310	158,292,179	161,055,993	168,343,942

The City maintains replacement and expansion funds for financing capital projects. Consistent with SWRCB revenue program requirements, the City distinguishes between replacement and expansion CIP costs. Similar to the O&M, the City maintains three CIP funds. The Muni Fund 41506 includes CIP that is associated exclusively with the City's retail service area collection and pumping needs. The City bears exclusive responsibility for the Fund 41506 CIP project costs. The Metro Funds 41508 and 41509 CIP relate to the regional system infrastructure shared by both the City and the PAs. Therefore, the City and the PAs share the responsibility for these Metro Funds CIP costs. The Muni Fund and Metro Fund CIP projects include both replacement and expansion related projects.

A summary of planned wastewater CIP expenditures for each year during the study period FY 2001 to FY 2005, is shown in Table 5-4. The total wastewater CIP estimated for the study period is nearly $618 million. As Table 5-4 indicates, nearly $169 million of CIP expenditures are scheduled for FY 2002. A list of proposed CIP projects for both the Muni and the Metro funds as reflected in the FY 00 Rate Case is included in [redacted].

Major Capital Improvement Financing Plan

The CIP is to be funded through a combination of system revenues and debt financing. The CIP funding sources include the following:

System Revenues:

- Capacity charges from the City and the PAs
- Pay-as-you-go revenues from PAs
- City connection fees

Capital Financing:

- Bond proceeds
- Contributions in aid – SRF
- Grant receipts
- Interest earnings

TABLE 5-4 SUMMARY OF CAPITAL IMPROVEMENT PROGRAM

Description	2001 $	2002 $	2003 $	2004 $	2005 $
MUNICIPAL SEWER FUND - 41506					
Total Municipal Capital Expenditures	65,938,000	98,656,000	69,589,000	48,477,000	38,182,000
METRO EXISTING SEWER FUND - 41508					
Total Metro Existing Capital Expenditures	20,511,000	8,624,000	11,101,000	12,409,000	4,471,000
METRO NEW CONSTRUCTION SEWER FUND - 41509					
Total Metro New Construction Capital Expenditures	88,098,000	61,941,000	31,032,000	33,658,000	25,171,000
TOTAL SYSTEM CIP					
Total Wastewater System Capital Expenditures	174,547,000	169,221,000	111,722,000	94,544,000	67,824,000

The CIP financing plan anticipates annual system revenues in the range of $15 to $18 million during the study period, FY 2001 through FY 2005. In addition, total capital financing revenues for the study period are estimated at nearly $345 million, of which $278 million are estimated bond proceeds. Interest earnings computed at an annual rate of 5% are estimated at $17 million. Table 5-5 presents the proposed CIP financing plan to finance major CIP projects over the five-year period from FY 2001 to FY 2005.

Debt Service Requirements

Debt service requirements are summarized in Table 5-6, and consist of principal and interest payments on existing debt. The City currently has debt payments associated with outstanding parity bonds (Series 1993 and Series 1995), Series 1997A and 1997B bonds, Series 1999A and 1999B bonds, and State Revolving Fund (SRF) interest free loans. Existing debt service requirements during the study period include annual payments in the range of $77 to $99 million.

Debt Service Coverage

The City needs to meet debt service coverage requirements on its existing outstanding bond issues. Typically, to meet debt service coverage requirements and obtain a good rating, the City needs to ensure that adequate revenues are available to meet its expenditures. Rating agencies use coverage as a measure of an agency's ability to repay debt and ensure financial stability.

Coverage requirements typically vary between 1.10 and 1.25. The Parity Obligations stipulate that City's Net System Revenues shall amount to at least 1.20 times the Maximum Annual Debt Service on

TABLE 5-5 CAPITAL IMPROVEMENT PROGRAM FINANCING PLAN

Description	Fiscal Year Ending June 30				
	2001	2002	2003	2004	2005
	$	$	$	$	$
Source of Funds					
Transfers					
Transfer from Operating Fund (Pay-as-you-go)	0	0	0	0	0
Prior Year Appropriations	194,877,000	141,811,000	91,638,000	78,453,000	66,250,000
Capital Revenues					
New Sewer Connections	111,000	112,000	113,000	114,000	115,000
Capacity Charge Revenues - City	8,963,000	9,409,000	9,881,000	10,375,000	10,893,000
Pay-as-You-Go-Revenues - PA's	5,772,000	5,498,000	4,901,000	4,674,000	7,404,000
Capacity Charge Revenues - PA's	1,198,000	1,198,000	1,198,000	0	0
Capital Financing					
Bond Proceeds	0	112,909,000	67,035,000	61,454,000	37,304,000
Contributions in Aid - SRF Loans	31,684,000	7,923,000	0	0	0
Contributions in Aid - City Entities	1,630,000	3,631,000	3,271,000	3,191,000	3,091,000
Other Financing - COP	0	0	0	0	0
Anticipated Grant Funds	11,704,000	0	0	0	0
Interest Income [1]	6,854,400	2,445,900	3,023,600	2,269,200	2,234,100
Total Funds Available	262,793,400	284,936,900	181,060,600	160,530,200	127,291,100
Use of Funds					
Major Capital Improvements	174,547,000	169,221,000	111,722,000	94,544,000	67,824,000
CIP Encumbrances	141,811,000	91,638,000	78,453,000	66,250,000	54,780,000
Transfer to Operating Fund	0	0	0	0	0
Capital Financing Reserve Requirement	0	8,646,300	5,133,400	4,706,000	2,856,600
Capital Financing Issuance Expense	0	3,791,000	2,250,000	2,063,000	1,253,000
Total Use of Funds	316,358,000	273,296,300	197,558,400	167,563,000	126,713,600
Capital Fund Balance					
Net Annual Cash Balance	(53,564,600)	11,640,600	(16,497,800)	(7,032,800)	577,500
Beginning Balance	108,402,700	54,838,100	66,478,700	49,980,900	42,948,100
Funds on Hand at End of Year	54,838,100	66,478,700	49,980,900	42,948,100	43,525,600

[1] Interest on available capital funds computed at a 5% annual interest rate.

TABLE 5-6 OPERATING FLOW OF FUNDS

Line No	Description			Projected				
				2001 $	2002 $	2003 $	2004 $	2005 $
	Revenue							
1	Sewer Service Charges Under Existing Rates			176,548,000	180,238,000	182,942,000	185,686,000	188,471,000
	Additional Service Charge Revenue Required:							
	Year	Annualized Revenue Increase	Months Effective					
2	2002	7.5%	4.0		4,506,000	13,720,700	13,926,500	14,135,300
3	2003	7.5%	4.0			4,916,600	14,970,900	15,195,500
4	2004	7.5%	4.0				5,364,600	16,335,100
5	2005	7.5%	4.0					5,853,400
6	Total Additional Service Charge Revenue			0	4,506,000	18,637,300	34,262,000	51,519,300
7	Total Sewer Service Charge Revenue			176,548,000	184,744,000	201,579,300	219,948,000	239,990,300
8	Total Operating Revenues from PA's			24,554,000	26,004,000	26,876,000	28,408,000	29,638,000
9	Total Shipboard Waste Revenues			631,000	678,300	729,200	783,900	842,700
10	Total Other Muni Operating Revenues			2,150,000	1,811,000	1,875,000	1,943,000	2,013,000
11	Total User Charge Revenues Available			203,883,000	213,237,300	231,059,500	251,082,900	272,484,000
	Non-operating Revenue							
12	Total Non-Operating Revenues			2,455,000	2,545,000	2,638,000	2,735,000	2,836,000
13	Debt Service Revenues from PA's			19,065,000	19,650,000	20,394,000	21,014,000	21,507,000
14	Total Non-Operating Revenue			21,520,000	22,195,000	23,032,000	23,749,000	24,343,000
	Transfer Revenues							
15	Transfer from Capital Fund			0	0	0	0	0
16	Transfer from Rate Stabilization Fund			12,000,000	9,000,000	11,000,000	500,000	0
17	Total Transfer Revenues			12,000,000	9,000,000	11,000,000	500,000	0
	Interest Income							
18	Interest Income From Operations (1)			11,330,700	12,034,800	12,863,300	14,337,900	15,900,800
19	Interest Income from Capital Fund			6,854,400	2,445,900	3,023,600	2,269,200	2,234,100
20	Interest Income From Restricted Reserves (2)			1,094,400	1,112,900	1,548,800	1,811,100	2,048,500
21	Total Interest Income			19,279,500	15,593,600	17,435,700	18,418,200	20,183,400
	Total Revenues							
22	Total Revenues Available			256,682,500	260,025,900	282,527,200	293,750,100	317,010,400
	Revenue Requirements							
23	Operation and Maintenance Expense			173,144,400	179,321,300	185,168,200	189,464,000	197,981,900
24	Transfer to Operating Reserve			654,000	772,000	731,000	1,037,000	1,065,000
	Total O&M Expense			173,798,400	180,093,300	185,899,200	190,501,000	199,046,900
	Debt Service							
25	Existing Revenue Bonds			77,054,000	81,893,000	89,596,000	95,107,000	99,344,000
26	Existing Other Financing			0	0	0	0	0
27	Existing State Revolving Fund Loans			1,096,000	1,473,000	4,021,000	4,021,000	4,021,000
28	Total Debt Service			78,150,000	83,366,000	93,617,000	99,128,000	103,365,000
29	Total Revenue Requirements			251,948,400	263,459,300	279,516,200	289,629,000	302,411,900
	Operating Fund Balance							
30	Net Operating Funds Available			4,734,100	(3,433,400)	3,011,000	4,121,100	14,598,500
31	Beginning Operating Fund Balance			18,350,800	23,084,900	19,651,500	22,662,500	26,783,600
32	Cumulative Operating Fund Balance			23,084,900	19,651,500	22,662,500	26,783,600	41,382,100
33	Minimum Desired Balance (3)			21,643,100	22,415,200	23,146,000	23,683,000	24,747,700
	Minimum Desired Balance with Adjustments			19,204,000	19,976,000	20,707,000	21,744,000	22,809,000

(1) Interest on available funds computed at 5% annual interest rate.
(2) Interest income from restricted reserves transferred to O&M.
(3) Estimated at 45 days of operation and maintenance expense.

all Parity Obligations Outstanding. The System Revenues include sewer service charges from the City's users and the PAs, Shipboard Waste and other Muni Revenues. In addition, system revenues also include all other moneys derived from the ownership and operation of the system including sewer connection fees, capacity fee revenues from the City and the PAs, Pay-as-You-Go revenues from PAs, anticipated Grant Funds, funds transferred from the Rate Stabilization Fund and other interest earnings on reserve funds. Maximum Annual Debt Service includes annual principal and interest payments on outstanding bonds.

A higher debt service coverage results in lower interest rates on debt. The revenue requirements projected for the study period will help the City to successfully meet its existing debt service coverage requirement, which is 1.20.

Reserves

The City needs to have adequate cash reserves to meets its operating, capital and debt service requirements. Debt service reserves provide protection from defaulting on annual debt service payments in times of financial crisis. The annual debt service reserve amount is estimated to be in the range of $22 to $45 million during the study period.

Operating reserves may be used to meet ongoing cash flow requirements as well as emergency requirements. Typically, a balance in the range of 10 percent and 50 percent of annual operating expenses is considered appropriate. This represents one to six months of working capital. The City maintains 45-day operating reserves. The estimated 45-day operating reserves are shown in Table 5-6. Interest from reserve funds may be used to finance operations.

PROPOSED REVENUE ADJUSTMENTS

The pro forma operations statement or cash flow summary presented in Table 5-6 provides a basis for evaluating the timing and level of wastewater revenue increases required to meet the projected revenue requirements for the study period. In order to meet projected revenue requirements and to maintain desired operating and debt reserve fund balances, the City proposed the following revenue adjustments, which were approved by the City Council. The required revenue adjustments are shown in Table 5-6. The proposed increases are as follows:

Effective Date	Increases
March 1, 2002	7.5 percent
March 1, 2003	7.5 percent
March 1, 2004	7.5 percent
March 1, 2005	7.5 percent

As shown in Line 32 in Table 5-6, available working capital funds are adequate to meet the recommended minimum levels of working capital.

Section 6
Study Issues/Stakeholder Input

As the graphical representation of the cost of service and rate design process indicates in the introductory section of this report, once the revenue and service requirements are determined, the next critical step in the process is the allocation of revenue requirements to the wastewater parameters. The allocation of costs and the design of rate structures are of particular significance in this Study due to the introduction of COD as an additional parameter in the allocation of costs and in the rate structure. Since stakeholder participation and input is an important element of this study, several issues pertaining to cost allocation methods and rate structure alternatives were discussed with the stakeholder group. It is essential to highlight the important issues that were examined and the stakeholder contributions to those issues since they provide the framework for the cost of service and rate design discussions presented in Sections 7 and 8.

ISSUES

The issues examined in this study can be classified into the following four major areas:

- SWRCB Regulatory Requirements
- Sewer User Classification
- Cost Allocation
- Rate Structure Design

The issues mentioned above are highly interdependent and hence both the analysis and the results of each of the issues have to be examined in terms of the potential impact on each other.

SWRCB Regulatory Requirements

The City has received federal and state Clean Water Grant (CWG) funds and State Revolving Fund (SRF) loans for the construction of wastewater treatment facilities. As a recipient of the federal grants and state loans, the City is obligated to establish a revenue program that complies with the revenue program requirements set forth by the SWRCB. One of the specific conditions that the City agreed to meet when it accepted the federal grant funds was to include strength-based billing in addition to flow-based billing. In compliance, the City established a flow and strength based billing for the PAs in 1998. Since 1998, the City has been billing all the PAs on the basis of flow, TSS and COD parameters.

However, the City continues to bill its own retail service area users only on the basis of flow and TSS and has not included COD into its billing structure. The SWRCB has now mandated that the City include either BOD or COD in its sewer billing. Since COD is easier to measure, the City has agreed to incorporate COD into the rate structure instead of BOD. Incorporation of COD into the sewer rate structure is not an issue of choice, but a mandatory regulatory requirement that the City needs to comply with.

The SWRCB provides guidelines that enable grantees and loan recipients to develop a revenue program

that complies with its requirements. The guidelines include various aspects of a revenue program's development, including revenue requirements determination, user classification, cost allocation and implementing ordinances. The SWRCB's guidelines on user classification and cost allocation have direct implications on this study.

User Classification

The SWRCB's guidelines on the identification of users state that,

> ".....the users of the treatment works and their associated wastewater flows and loadings (BOD_5, SS or other appropriate constituents) must be identified. Flows and loadings must be documented ...., in order that proportional costs can be calculated."

The City's residential users are classified into SFR and MFR user classes. The commercial/industrial users are classified into a user matrix of 200 discrete classes based on the users' percentage of water returned to sewer and the strength of TSS parameter. The users are assigned a characteristic TSS depending on the type of business activity and return to sewer percentage. The existing user matrix has 10 TSS classes with TSS range from 0 to 1,000 mg/l, increasing in 100 mg/l increments. The matrix has 20 return to sewer classes with the first 19 classes having a range from 5 to 99 percent with return to sewer increasing in four percentage increments. The twentieth class's return to sewer is equal to the metered water use. Figure 6-1 shows this 10x20 matrix with the rates projected for the 7.5 percent increase in March 2002 under the current rate structure.

FIGURE 6-1 PROJECTED COMMERCIAL/INDUSTRIAL USER CLASS MATRIX

Return to Sewer	TSS 50 A	TSS 150 B	TSS 250 C	TSS 350 D	TSS 450 E	TSS 550 F	TSS 650 G	TSS 750 H	TSS 850 I	TSS 950 J
100%	$2.54	$2.85	$3.14	$3.42	$3.73	$4.01	$4.31	$4.59	$4.89	$5.18
95-99%	$2.47	$2.77	$3.04	$3.32	$3.61	$3.89	$4.17	$4.45	$4.75	$5.02
90-94%	$2.34	$2.62	$2.89	$3.14	$3.43	$3.69	$3.97	$4.12	$4.50	$4.76
85-89%	$2.22	$2.48	$2.73	$2.98	$3.24	$3.49	$3.71	$4.00	$4.26	$4.50
80-84%	$2.08	$2.34	$2.57	$2.70	$3.06	$3.29	$3.53	$3.77	$4.01	$4.25
75-79%	$1.96	$2.20	$2.42	$2.63	$2.87	$3.09	$3.32	$3.54	$3.77	$3.99
70-74%	$1.83	$2.05	$2.26	$2.45	$2.68	$2.87	$3.10	$3.30	$3.52	$3.73
65-69%	$1.70	$1.91	$2.10	$2.29	$2.50	$2.69	$2.89	$3.08	$3.28	$3.53
60-64%	$1.58	$1.77	$1.94	$2.12	$2.31	$2.49	$2.67	$2.85	$3.03	$3.21
55-59%	$1.45	$1.63	$2.00	$1.95	$2.13	$2.29	$2.45	$2.62	$2.79	$2.93
50-54%	$1.32	$1.48	$1.63	$1.78	$1.94	$2.09	$2.25	$2.39	$2.57	$2.69
45-49%	$1.19	$1.34	$1.47	$1.61	$1.75	$1.89	$2.02	$2.16	$2.30	$2.43
40-44%	$1.07	$1.20	$1.32	$1.44	$1.56	$1.69	$1.81	$1.93	$1.95	$2.17
35-39%	$0.94	$1.06	$1.16	$1.27	$1.38	$1.45	$1.59	$1.70	$1.81	$1.92
30-34%	$0.85	$0.91	$1.00	$1.09	$1.19	$1.28	$1.38	$1.49	$1.57	$1.66
25-29%	$0.90	$0.77	$0.85	$0.92	$1.01	$1.08	$1.16	$1.24	$1.32	$1.40
20-24%	$0.56	$0.63	$0.69	$0.74	$0.82	$0.88	$0.95	$1.01	$1.08	$1.14
15-19%	$0.44	$0.49	$0.53	$0.58	$0.64	$0.68	$0.73	$0.78	$0.83	$0.88
10-14%	$0.31	$0.34	$0.38	$0.41	$0.45	$0.48	$0.52	$0.55	$0.59	$0.62
05-09%	$0.18	$0.20	$0.22	$0.24	$0.26	$0.28	$0.27	$0.32	$0.34	$0.36

In addition, the City has established a separate class "K" for commercial/industrial users with greater than 1,000 mg/l of TSS and computes rates individually for those users. The City's existing user classification for the most part complies with the revenue program requirements.

With respect to large users the revenue program guidelines, Section 1-3, state that,

> "Large commercial users discharging more than 25,000 gallons per day must have their costs allocated individually."

While the City currently assigns costs individually for commercial/industrial users with greater than 1,000 mg/l of TSS, it does not assign costs individually for users that discharge greater than 25,000 gpd of flows. In addition, the incorporation of COD necessitates changes to the existing user matrix. Therefore, Black & Veatch performed a review of the user classifications and proposed alternatives to classify commercial/industrial users.

User Classification Options: No changes were required for the residential classifications. To comply with the requirements, commercial/industrial users with greater than 25,000 gpd of discharge were first identified as large users. Different options were then examined for redefining commercial/industrial users discharging less than 25,000 gpd of wastewater flows.

The existing user class matrix method with 200 discrete classes enables the City to efficiently accommodate high levels of flow and strength variability that usually exists among the different types of business users. Therefore, most of the options examined are centered on the matrix method. The four options considered for commercial/industrial user classification (< 25,000 gpd of discharge) were:

- ***Option 1:*** Retain the existing commercial/industrial 20X10 user class matrix but convert the 10 TSS classes to 10 classes of cost weighted TSS/COD index.
- ***Option 2:*** Modify the existing commercial/industrial matrix to a 10X5 matrix of 50 discrete classes.
- ***Option 3:*** Eliminate the Matrix method and instead define 7-9 TSS/COD strength based commercial/industrial user groups.
- ***Option 4:*** Define a 10X11 matrix of 110 classes based on TSS and COD increments.

Option 1: This option retains the 20X10 user class matrix with 200 discrete classes. The matrix includes the existing 20 return to sewer classes but instead of the 10 TSS strength based classes, the matrix includes 10 TSS/COD based classes in the form of a cost-weighted TSS/COD index. This option while retaining the familiar 20X10 matrix also accommodates the inclusion of the COD parameter in classifying users.

Option 2: This option involves developing a modified user class matrix with fewer discrete classes. Instead of the 200 discrete classes, the modified matrix would be a 10X5 matrix with only 50 classes. The matrix would be based on 10 return to sewer classes and five TSS/COD based classes. As in Option 1, the TSS/COD classes will be in the form of a cost-weighted index. This option has fewer classes than Option 1 since the TSS/COD index increases in larger increments and the return to sewer percentage decreases in larger decrements than that proposed in Option 1.

Option 3: This option eliminates the use of the matrix method and instead defines seven to nine broad TSS/COD strength based commercial user groups. In this option, the return to sewer variable would be applied to each user's water usage, directly at the time of billing.

Option 4: This option defines user classes based on the existing matrix method. However, instead of the return to sewer/TSS matrix, this option substitutes a strength-based 10X11 TSS/COD matrix with 110 discrete classes. The 10 TSS strength classes would increase in 100 mg/l increments and the 11 COD strength classes would increase in 200 mg/l increments. As in option 3, the user's return to sewer percentage would be directly applied to the user's water usage during billing.

The stakeholders' group decided to recommend implementation of Option 4 since the City' users are familiar with the matrix format and this option provides greater equity than the other options examined.

Cost Allocation

The approach used in allocating costs to the wastewater parameters is fundamental to a fair and equitable apportioning of costs among the City's various user classes. The two specific cost allocation issues that were examined during this Study include:

1. Selection of a cost allocation method to allocate the City's cost of service to the wastewater parameters.
2. Application of the selected cost-allocation method in actually allocating costs.

Selection of Cost Allocation Method

Utilities use different cost allocation methods taking into consideration several factors including local policy, characteristics of the wastewater flows received, type of wastewater system (regional system versus single municipal system), type of treatment facilities, geographic and engineering operational considerations and regulatory requirements.

The City operates a regional system that provides retail service to the City's users and wholesale service to the PAs. In addition, as a recipient of federal grants and state loans the City is obligated to comply with CWG and SRF program requirements.

With respect to establishing a system of user charges, the SWRCB guidelines state that:

> "User charges must recover the cost of operation and maintenance (including replacement) from all users based on their proportionate contribution to the total wastewater loadings from all users. The State recommends that user rates designed to recover all other costs be proportional to the cost of the service rendered."

Further, the Clean Water Act of 1972, P.L. 92-500 as amended, (Act) states, in part:

> "The Administrator shall not approve any grant for any treatment works under

> section 201(g)(1) after March 1, 1973, unless he shall first have determined that the applicant (A) has adopted or will adopt a system of charges to assure that each recipient of waste treatment services within the applicant's jurisdiction, as determined by the Administrator, will pay its proportionate share (except as otherwise provided in this paragraph) of the costs of operation and maintenance..."

To ensure compliance with SWRCB revenue program requirements, the allocation of costs to the different parameters has to be based on the following three underlying principles:

- The wastewater parameters used in allocating cost responsibility to the different user classes must include flow, TSS and COD.
- Cost allocations to the flow, TSS and COD parameters need to be done using a "system-wide" approach. In order to recognize the shared configuration of the City's wastewater system that includes a complex exchange of solids, centrates and effluents and the sharing of a common outfall, the facilities need to be considered not in isolation but as components of an integrated "regional system".
- A proportional cost allocation method needs to be used to allocate costs between the different parameters and the different user classes.

In addition to the above, factors that were considered in the selection of a cost allocation method include:

- The revenue program developed for the City's wholesale service to the PAs. The City developed a revenue program, which is based on a system-wide approach with a functional-design based allocation of costs to the wastewater parameters of flow, TSS and COD. This method, which was approved by the SWRCB, is outlined in the Regional Wastewater Disposal Agreements between the City and the PAs. Changes to the cost allocation method for the City's own retail users have to be reviewed in the context of its potential impact on the City's existing contractual obligations to the PAs.
- Fair and equitable allocation of costs among user classes.

Cost Allocation Options: Black & Veatch outlined three allocation methods taking into consideration the factors discussed above. The three methods reviewed include:

- ***Option 1: Functional Method.*** In this method costs are allocated to wastewater parameters based on the functions of the various steps in the treatment process. This allocation is based on the premise that operational function drives costs. This method usually results in higher cost allocations to strength parameters.
- ***Option 2: Design Method.*** In this method costs are allocated to wastewater parameters based on design criteria used to size individual facilities or processes. This allocation is based on the premise that design considerations drive costs. This method results in higher

cost allocation to flow.

- *Option 3: Functional-Design Method.* In this method costs are allocated to wastewater parameters based on the functional, design and operational performance criteria of the different processes. This is the method that is currently used by the City and generally provides a balance between the other two methods.

It was decided to retain the functional-design method as the appropriate method for allocating the City's cost of service. This method has already been approved by the City and the PAs and provides a balanced and proportionate approach to allocating costs.

Application of the Selected Cost Allocation Method

Black & Veatch reviewed MWWD's application of the functional-design method in allocating costs to the wastewater parameters. In addition, Black & Veatch also reviewed the allocation methodology described in a paper presented in the Water Pollution Control Federation in 1986 by Dr. C.W. Corssmit. While the methodology prescribed in the paper titled, "Wastewater Utility Unit Process Cost Parameter Allocations: Advancing Towards A Scientific Method", is not universally accepted as a definitive industry standard, Black & Veatch reviewed Corssmit's allocation methodology at the request of the stakeholder group.

Review Findings: MWWD had conducted an extensive cost allocation study in 1998 to determine the Metro O&M and capital allocation percentages for the parameters of flow, TSS and COD. MWWD conducted the allocation study using the three alternative allocation methods: Functional, Design and Functional-Design. MWWD ultimately adopted the cost allocation percentages derived using the *Functional-Design* method after the SWRCB and the PAs approved it. The allocations are currently used in determining the City and PAs' share of Metro O&M and capital costs.

Black & Veatch concurred with the functional-design allocation method adopted by MWWD for the following reasons:

- The method is based on the *proportional* cost allocation method, as stated in the Clean Water Act.

- Consistent with the definition of functional-design method, the allocation takes into consideration the operational performance characteristics of the facilities and the regulatory requirements. For example, PLWTP, which is an advanced primary treatment plant, removes nearly 85 to 87 percent of the influent TSS and nearly 60 percent of the influent BOD. PLWTP needs to comply with the NPDES requirements established by the EPA. The permit requires PLWTP to achieve 80 percent removal of TSS and 58 percent removal of BOD. While PLWTP's primary function is to mainly remove TSS, it also incidentally removes BOD during the process. To meet the NPDES 58 percent BOD removal requirement, PLWTP has to actually achieve 85 to 87 percent TSS removal since BOD removal in an advanced primary facility is essentially accomplished through TSS removal.

Taking into consideration PLWTP's BOD removal requirement and the operational performance

required to meet the NPDES requirements, the MWWD functional-design method allocates PLWTP strength costs between TSS and BOD/COD in proportion to the relative removal of these two strength constituents of the wastewater.

- The method of allocating strength costs between TSS and BOD/COD proportionate to relative removal is consistently applied to all other facilities in the system, in recognition of the fact that the City's various facilities operate as an integrated regional system.

- The allocation process appropriately classifies wastewater system costs into various component costs including direct and indirect costs and allocates the indirect costs to the parameters in proportion to the allocation of direct costs.

Black & Veatch reviewed the methodology proposed in Corssmit's paper and concluded that the methodology is not applicable to the City's regional system for the following reasons:

- The functional-design based allocation method proposed for advanced primary treatment facilities in Corssmit's paper does not allocate any costs to BOD removal, and instead allocates all costs between flow and TSS. This approach is not suitable to PLWTP, which has a unique regulatory obligation to remove BOD.

- Corssmit's method does not take into account the removal of BOD in advanced primary plants. The use of Corssmit's cost allocation approach to PLWTP would result in excessive allocation of PLWTP costs to the TSS parameter and consequently adversely impact users that contribute high amounts of TSS and benefit users that contribute high amounts of BOD/COD. The method would lead to a disproportionate allocation of PLWTP costs between TSS and COD.

MWWD's cost allocation approach develops defensible unit costs of flow, TSS and COD and meets regulatory requirements. However, a few minor changes were made to fine-tune MWWD's method and the revised allocation percentages were used for the City's retail service area cost allocations. The revisions relate to the allocation of Metro Biosolids Center annual O&M costs and the allocations of a few sewer trunk line CIP costs. The revisions are discussed in Section 7 of this report.

Rate Structure Design

The classification of the users, the allocation of costs and the design of the rate structure, all have an impact on user rates. The factors considered in the design of rate structure options include:

- Inter-class revenue neutrality: The rate structure for each user class would result in each user class paying its allocated share of costs. In other words, no user class would pay more or less than its fair share.

- The rate structure would include a fixed charge and a variable charge component.

- The fixed charge in the form of a base fee would include only those administrative and

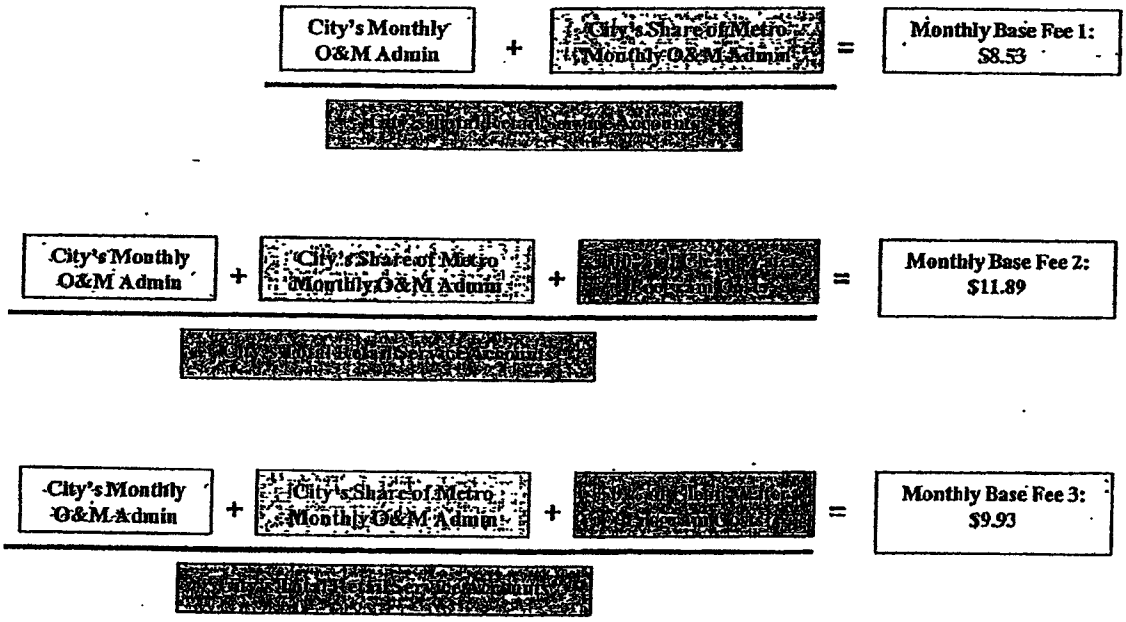
general costs that are common to all and would be the same for each account.

The following issues were examined as part of the evaluation of the rate structure alternatives:

- Level of Base Fee
- Level of SFR Usage Cap
- TSS/COD loadings computation for the different classes in the commercial/industrial matrix

Level of Base Fee: Three different levels of Base Fee were evaluated: monthly base fees of $8.53, $11.89 and $9.93. Figure 6-1 shows the costs included in the computation of the different Base Fee levels. A monthly Base Fee of $9.93 was agreed upon by the stakeholders' group.

FIGURE 6-2 COMPUTATION OF DIFFERENT LEVELS OF BASE FEES



Level of SFR Usage Cap: The City currently has a usage cap of 10 hcf for the SFR class and therefore water usage greater than 10 hcf is not considered for sewer billing. However, the mass balance analysis indicates a need for a higher usage cap level. While the increase or decrease of usage cap levels does not impact any other user class, it does impact individual users within the SFR user class. Typically, lower usage caps benefit high volume water users and higher usage caps benefit low volume water users.

It was necessary to increase the level of SFR usage cap to achieve a reliable mass balance. Three different alternative SFR usage cap levels were proposed: Usage Cap levels at 12, 14 and 16 hcf of water usage. An incremental increase to 12 hcf would be appropriate, however, the stakeholders' group consensus was to increase the usage cap to 14 hcf.

At the 10 hcf cap, 76 percent of winter water usage is captured and at 12, 14 and 16 hcf levels, the capture rate is 82, 87 and 90 percent, respectively.

TSS/COD Loadings Computation: In the proposed commercial/industrial rate matrix, each TSS and COD class is defined by a range of strength, for example, 101 – 200 mg/l of TSS or 201 – 400 mg/l of COD. To compute the actual rate per hcf of wastewater for each class in the matrix, the following two methods could be used:

- Mid-point of the strength range
- The actual strength computed based on the available user data for all the users that belong to a particular class in the matrix

There are both pros and cons to both of the methods mentioned above. The benefit of using the mid-point of the strength range is that it can be consistently applied to all the strength ranges in the matrix. However, the mid-point strength for any given range also has the potential of being either higher or lower than the actual average strength of all the users in a given class, which could lead to higher or lower user revenues than projected.

The benefit of using actual strength computed based on available user data is that it is likely to be a more accurate representation of user class strength characteristics and revenue collection. However, the disadvantage is that in reality user data may not be available for some strength ranges if currently no users belong to those strength ranges. In such a situation, mid-point of the strength range would have to be used to compute the wastewater rate. In addition, rates would have to be recomputed when users and/or flows or strengths for any given range changes.

The stakeholders' group decided to use the mid-point of the strength range in computing the rates since it provides for a more consistent approach, which could be used to derive the rates for all the classes in the matrix, irrespective of user data availability.

STAKEHOLDER INPUT

The study process included the participation of a stakeholders' group with members representing a broad range of interests, both residential and businesses. The goal of stakeholder participation was to ensure public understanding of the complexities of the cost of service and rate design process and to create an opportunity for the group to examine rate structure alternatives, to voice concerns and to provide recommendations. While detailed discussions on stakeholder participation are presented in an independent report titled, "Sewer Cost of Service: stakeholders' group Final Report", the group's recommendations are outlined here.

User Classification: Black & Veatch presented the four different options available for classifying

commercial/industrial users with discharge less than 25,000 gpd of flows. The group reviewed the alternatives presented and preferred the strength based matrix classification. Therefore, the group recommended Option 4, which involves establishing a 10X11 TSS/COD user class matrix.

Cost Allocation: The group reviewed the three alternative cost allocation methods and accepted the use of the functional-design method to allocate costs to flow, TSS and COD. However, a subgroup of members disagreed with the way the functional-design method was applied in allocating costs, even though in concept, they accepted the functional-design method. Instead of the City's method of proportionate allocation of costs to the parameters, the subgroup preferred an alternative incremental allocation based method. The subgroup's alternative method, which is referred as the "Straight TSS Method", is included in Appendix B of the Sewer Cost of Service Stakeholders' Group Final Report.

Black & Veatch reviewed the "Straight TSS Method" method proposed by the stakeholder subgroup and found the method unacceptable due to the following reasons:

- The method uses an incremental approach rather than proportional cost sharing in allocating PLWTP and MBC costs, leading to a disproportionately higher allocation of costs to the TSS than to the COD parameter.

- The method advocates an incremental cost allocation approach to PLWTP primary costs, but proposes proportional cost allocation for primary and secondary costs at NCWRP. This approach results in internal inconsistencies in the methods used across the different processes and facilities of an integrated system.

In an effort to obtain the SWRCB's opinion on the cost allocation issue, Black & Veatch derived allocation percentages for flow, TSS and COD using three different methods and sent the analysis to the SWRCB. The three alternative cost allocation methods sent were:

- City's functional-design allocation based on MWWD's proportionate removal of TSS and COD.
- stakeholder subgroup's allocation based on the "Straight TSS Method".
- City's allocation based on the "Modified Straight TSS Method", which allocated costs consistently at PLWTP and NCWRP.

The cost allocation package sent to the SWRCB is included in [redacted] The SWRCB's response essentially states that the "Straight TSS Method" and the "Modified Straight TSS Method" do not comply with the CWG program regulations and SRF program guidelines since these methods do not allocate costs proportionately between TSS and COD. The allocation method used for the City needs to be consistently applied to the regional system and the PA's. This would necessitate a change from the current method and possibly extensive negotiations with the PA's to obtain their approval. The SWRCB's response is included in [redacted]

Rate Structure Design: The group provided input on all three issues examined as part of rate structure design.

- *Base Fee:* With respect to the Base Fee alternatives presented, the group recommended setting the monthly base fee under $10 to ensure that low income/low volume users are not burdened with a high fixed monthly charge. Therefore the group selected the $9.93

monthly base fee option.

- *SFR Usage Cap:* As regards the SFR usage cap level, the group preferred that usage cap be set at 16 hcf of water usage. However, taking into consideration the impact of the 16 hcf usage cap level on both the City's high water users as well as the large low-income families, the group recommended that SFR usage cap be set at the 14 hcf level in FY 2002 and be increased to the ultimate 16 hcf over a period of two years.

- *TSS/COD Loadings Computation:* While most of the individual members did not have any specific preference with respect to the method used in the computation of rates for each class in the matrix, the group as a whole recommended that loadings be computed using the mid-point strength of the range.

The stakeholders' input in conjunction with input from City staff provided the direction for the subsequent phases of the Study, which include the allocation of costs and the design of rate structures. The allocation of costs is discussed in Section 7 and the proposed rate structures are discussed in Section 8.

Section 7
Cost of Service

The determination of the City's user class flows and loadings discussed in Section 4 of this report, and the revenue requirements reviewed and finalized through the operating and capital cash flow analysis discussed in Section 5 of the report, provide the basis for performing the cost of service analysis. This section of the report discusses the allocation of operating and capital costs to the Flow, TSS and COD parameters, the determination of unit rates, and the estimation of user class cost responsibility.

COST OF SERVICE ANALYSIS

The total revenue requirements net of revenue credits from miscellaneous sources, is by definition, the net cost of providing service. This cost of service is then used as the basis to develop unit rates for the wastewater parameters and to allocate costs to the various user classes in proportion to the wastewater services rendered. The concept of proportionate allocation to user classes implies that allocations should take into consideration the quantity of wastewater a user contributes and the strength of wastewater.

In this Study, wastewater rates need to be calculated for FY 2002, and accordingly FY 2002 revenue requirements are used in the cost allocation process.

Cost of Service to be Allocated

The annual revenue requirements or costs of service to be recovered from wastewater charges include operation and maintenance expenses, costs associated with annual renewal and replacements, and other capital related costs. O&M expenses include costs directly related to the collection, treatment, and disposal of wastewater, and maintenance of system facilities. Renewals and replacements represent the annual recurring capital outlay for minor system improvements and purchase of equipment.

The total FY 2002 cost of service to be recovered from the City's retail users, as shown on line 15 in Table 7-1, is estimated at nearly $194 million, of which $130 million is operating costs and the remaining $64 million is capital costs. The cost of service analysis is based upon the premise of generating annual revenues adequate to meet the estimated annual revenue requirements. As part of the cost of service analysis, revenues from other non-City user sources such as revenues from shipboard waste and PAs are deducted from the appropriate cost elements. Additional deductions are made to reflect the use of rate stabilization fund and operating interest income during FY 2002. Adjustments are also made to account for cash balances and annualization of rate increases.

To allocate the cost of service among the different user classes in proportion to their flows and strength contribution, costs first need to be allocated to selected wastewater parameters. The following subsection describes the allocation of the operating and capital cost of service amounts to the selected parameters of the wastewater system.

TABLE 7-1 COST OF SERVICE TO BE RECOVERED FROM USER RATES

Line Line No.	Description	Operating Expense (FY 2002) $	Capital and Other Costs (FY 2002) $	Total (FY 2002) $
	Total Revenue Requirements			
1	Operation & Maintenance Expense	180,093,300		180,093,300
2	Total Debt Service		83,366,000	83,366,000
3	**Subtotal**	180,093,300	83,366,000	263,459,300
	Less Other Operating Revenues			
4	Total Operating Revenues from PA's	26,004,000		26,004,000
5	Total Other Muni Operating Revenues	1,811,000		1,811,000
6	Total Other Revenues from Shipboard Waste	678,300		678,300
7	Total Non-Operating Revenues	2,545,000		2,545,000
8	Debt Service Revenues from PA's		19,650,000	19,650,000
9	Transfer from Rate Stabilization Fund	9,000,000		9,000,000
10	Interest Income	15,593,600		15,593,600
11	**Subtotal**	55,631,900	19,650,000	75,281,900
	Less Adjustments			
12	Adjustment for Annual Cash Balance	3,433,400	0	3,433,400
13	Adjustment for Partial Year Rate Increase	(9,012,000)		(9,012,000)
14	**Subtotal**	(5,578,600)	0	(5,578,600)
15	**Cost of Service to be Recovered from Rates**	130,040,000	63,716,000	193,756,000

Cost Allocation to Wastewater Parameters

The three major parameters selected in this Study for allocation are Wastewater Flows (Flows), TSS and COD. TSS and COD constitute the strength components of the wastewater discharge. In this study, the percentages used to allocate the FY 2002 cost of service to the wastewater parameters are derived based on the functional-design method of allocation. The allocation of costs to the three parameters involves:

- Identification of functional areas and costs of the wastewater system.
- Apportioning of FY 2002 costs into O&M and Capital costs of service (presented in Table 7-1).
- Determination of O&M and CIP allocation percentages to the three parameters.

Identification of Functional Areas and Costs

As described in Section 5, O&M costs can be categorized broadly into the functional areas of collection, treatment, laboratory and administrative and general services. The allocation basis used to allocate each of these functional costs to the Flow, TSS and COD parameters differs.

In the functional-design method of allocation, both the function and the design of the facilities need to be considered in allocating costs to the parameters. The primary *function* of collection facilities such as trunk lines, sewer lines and interceptors is to convey untreated influents to the treatment facilities and treated effluents from the treatment facilities to the final discharge location, which in the City's case is the ocean. These collection facilities are *designed* (sized) according to the volume of flows that they are expected to handle. Hence, based on the *functional-design* method, since both the functional and design elements of the collection facilities relate exclusively to flow, all capital and O&M expenditures related to collection facilities are usually allocated entirely to wastewater flows.

From a functional-design perspective, treatment facilities include processes that relate to all three wastewater parameters. For instance, the primary *function* of the City's PLWTP is the removal of TSS. In terms of design, the components in the plant including clarifiers and sedimentation basins are *designed* to handle expected volume of flows. With respect to operational performance, PLWTP removes TSS and is required to remove a portion of the COD. Therefore, since the treatment facilities relate to all three parameters, capital and O&M expenditures associated with treatment facilities are allocated to Flow, TSS and COD parameters.

Laboratory services (also referred to as Technical Services) relate to both the flow and strength elements of wastewater and hence laboratory services related O&M costs are allocated to all three parameters.

Administrative and general services relate to indirect support activities necessary to operate a wastewater system and hence indirect costs are usually allocated to the parameters in proportion to the allocation of all other direct costs such as collection, treatment and technical services costs.

Determination of Allocation Percentages

As shown in Figure 5-1 in Section 5 of this report, the City's wastewater costs which are the focus of this Study include both Muni costs and the City's share of Metro costs. Available historical actual costs are usually used to derive allocation percentages. In this Study, FY 1999 Muni and Metro Annual O&M and FY 1997 Muni and Metro CIP total project costs are used as the basis to derive the allocation percentages. At the time this study was initiated, this was the most recent data available and the PAs and SWRCB had approved these allocations.

Black & Veatch performed the following steps to derive the allocation percentages for allocating the City's O&M and Capital costs.

- *Step 1:* Reviewed MWWD's Metro O&M and Capital allocation percentages and made changes where necessary.
- *Step 2:* Derived the overall cost allocation percentages for the City's O&M and Capital Costs.

Step 1: Black & Veatch reviewed MWWD's allocation methods and made minor changes to the Metro allocation. The changes relate primarily to Metro's allocation of 1999 MBC O&M costs and four of the 1997 Metro CIP project costs. Details of the allocation of the various components of Metro O&M costs and of the Metro CIP project costs are included in [redacted] respectively. The summary of the derived Metro O&M and capital allocation percentages is presented in Table 7-2.

TABLE 7-2 METRO O&M AND CIP COST ALLOCATION PERCENTAGES

Description	Functional - Design Method Wastewater Parameters		
	Flow	TSS	BOD
	%	%	%
TOTAL METRO O&M COSTS	41.14%	33.24%	25.62%
TOTAL METRO 41508 & 41509 CIP COSTS	58.21%	21.64%	20.16%

Step 2: Metro O&M and Capital allocation percentages derived in Step 1, were applied to the relevant Muni O&M costs and to the City's share of Metro O&M and capital costs. The allocation of the City's FY 1999 O&M functional component costs is presented in Table 7-3 and the overall O&M and capital allocation percentages derived for the City's cost of service are presented in Table 7-4.

TABLE 7-3 DERIVATION OF CITY'S O&M ALLOCATION PERCENTAGES (FY 1999)

Description	Amount $	Functional - Design Method Wastewater Parameters			Functional - Design Method FY 1999 Costs		
		Flow	TSS	COD	Flow	TSS	COD
		%	%	%	$	$	$
City Collection System	50,000,000	100.00%	0.00%	0.00%	50,000,000	0	0
City Treatment - San Pasqual (1)	3,000,000	28.20%	40.36%	31.44%	846,131	1,210,707	943,162
City's Share of Metro Treatment (2)	60,000,000	41.14%	33.24%	25.62%	24,684,614	19,943,402	15,371,985
City Laboratory (3)	5,000,000	30.00%	40.00%	30.00%	1,500,000	2,000,000	1,500,000
City Total - Direct O&M Costs	118,000,000	65.28%	19.62%	15.10%	77,030,745	23,154,108	17,815,147
City Administration	11,000,000	65.28%	19.62%	15.10%	7,180,832	2,158,434	1,660,734
Total City O&M Cost	129,000,000	65.28%	19.62%	15.10%	84,211,577	25,312,542	19,475,881

NOTE
(1) Used Metro Treatment O&M allocation percentages.
(2) Used Total Metro Direct O&M allocation percentages
(3) Used Metro Technical Services O&M allocation percentages.

TABLE 7-4 DERIVED ALLOCATION PERCENTAGES FOR CITY'S COST OF SERVICE

Description	Functional - Design Method Wastewater Parameters		
	Flow	TSS	BOD/COD
	%	%	%
Total City O&M Cost Allocation	65.28%	19.62%	15.10%
Total City Capital Cost Allocation	66.67%	17.26%	16.07%

Apportioning of City's FY 2002 O&M and Capital Cost of Service Costs

The O&M and Capital cost allocation percentages presented in Table 7-3 were used to allocate FY 2002 cost of service amounts to Flow, TSS and COD. Table 7-5 shows the allocation of FY 2002 cost of service to the three parameters.

TABLE 7-5 ALLOCATION OF COST OF SERVICE TO FLOW, TSS AND COD

Description	Amount	Wastewater Parameters		
	$	Flow $	TSS $	COD $
City's Cost of Service O&M Costs	130,040,000	84,890,000	25,514,000	19,636,000
City's Cost of Service Capital Costs	63,716,000	42,480,000	10,997,000	10,239,000
Total City's Cost of Service (1)	193,756,000	127,370,000	36,511,000	29,875,000

NOTE: (1) With a 7.5% rate increase effective March 1st, 2002.

Unit Costs of Service

In order to allocate costs of service to the different user classes, unit costs of service need to be developed for Flow, TSS and COD. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual loadings of the respective parameter (the projected annual Flows, TSS and COD loadings for FY 2002 were discussed in Section 4). Table 7-6 shows the development of the FY 2002 unit costs for each of the three wastewater parameters.

TABLE 7-6 DEVELOPMENT OF UNIT COSTS OF SERVICE (FY 2002)

Description	Wastewater Parameters Flow	TSS	COD
Annual Costs of Service	($)	($)	($)
Total City's Cost of Service ($)	127,370,000	36,511,000	29,875,000
Annual User Loadings	(hcf)	(lbs)	(lbs)
Total City's Annual User Loadings (1)	59,509,728	99,973,423	229,340,357
Unit Costs of Service			
Unit Costs of Flow ($/hcf) (1)	$2.1403		
Unit Costs of TSS ($/lb) (1)		$0.3652	
Unit Costs of COD ($/lb)(1)			$0.1303

NOTE: (1) The loadings and unit costs projected for FY 2002 above are based on Mass Balance Analysis performed using FY 1999 data. The unit costs in the table are shown to four decimal places. The full unit costs are as follows:Flow - $2.14032233519871, TSS - $0.365207061080623 and COD - $0.130264905796759

User Class Costs

The unit cost of Flows, TSS and COD shown in Table 7-6 are then applied to the projected FY 2002 flows and loadings of each user class to derive user class costs. Table 7-7 shows the FY 2002 user class loadings and cost responsibility for each user class.

TABLE 7-7 USER CLASS WASTEWATER COST OF SERVICE (FY 2002)

User Class Description	Annual Wastewater Flows FY 2002 (HCF)	Annual TSS Loadings FY 2002 (LBS)	Annual COD Loadings FY 2002 (LBS)	Annual User Class Sewer Revenues $
Single Family Residential	24,955,925	41,006,578	69,915,241	77,497,118
Multiple Family Residential	18,116,067	29,576,749	50,753,048	56,187,202
Commercial/Industrial (< 25,000 gpd discharge)	9,654,784	19,410,018	48,374,123	34,054,476
Commercial/Industrial (> 25,000 gpd discharge)	6,782,952	9,980,078	60,297,945	26,017,205
Total	59,509,728	99,973,423	229,340,357	193,756,001

The SFR user class has the highest assignment of costs at over $77 million followed by MFR user class at over $56 million. Together, the City's residential class is responsible for 69 percent of the total cost of service. The commercial/industrial user class discharging less than 25,000 gpd of flows is responsible for nearly 18 percent of the cost of service and commercial/industrialuser class discharging more than 25,000 gpd of flows is responsible for the remaining 13 percent of the annual cost of service. Table 7-8 shows the distribution of each user class' accounts, annual flows, TSS and COD loadings, estimated FY 2002 revenues and actual FY 2000 revenues.

TABLE 7-8
USER CLASS DISTRIBUTION OF ACCOUNTS, FLOWS/LOADINGS, PROPOSED ANNUAL REVENUES (FY 2002) AND EXISTING ANNUAL REVENUES

User Class Description	Annual Wastewater Flow %	Annual TSS 2002 %	Annual COD 2002 %	Annual Wastewater Revenues % of Total Revenues FY 2002	Annual Wastewater Revenues (1) % of Total Revenues FY 2000
Single Family Residential	41.9%	41.0%	30.5%	40.0%	42.4%
Multiple Family Residential	30.4%	29.6%	22.1%	29.0%	29.5%
Commercial/Industrial (≤ 25,000 gpd discharge)	16.2%	19.4%	21.1%	17.6%	28.1%
Commercial/Industrial (>25,000 gpd discharge)	11.4%	10.0%	26.3%	13.4%	
Total	100%	100%	100%	100%	

NOTE: (1) Commercial/Industrial includes both ≤ 25,0000 and >25,000 gpd users

Table 7-8 also presents a comparison of user class revenue distribution among the different user classes under the proposed cost allocation and the City's existing allocation. There is a small reduction in the percentage of total revenues collected from MFR users under the proposed cost of service. Under the proposed rate structure, SFR user revenue contribution decreases from 42.4 percent to 40 percent of the total user revenues when compared to the current rate structure. This represents approximately a two percent reduction. These decreases in residential revenue contributions are offset by an increase in commercial/industrial user class revenues. The shift in user class revenue distribution between the residential and commercial/industrial user classes can be attributed to the introduction of COD parameter in the cost of service allocations. Many commercial/industrial businesses including supermarkets, food processing and organic chemical industries, and restaurants have much higher COD strengths than residential users, resulting in the shift in user class cost of service distribution.

The cost of service allocations conducted in this study based on the functional-design method comply fully with the SWRCB's revenue program requirements since the City's FY 2002 revenue requirements are allocated to the different user classes *proportionate* to their use of the wastewater system. As

mandated by SWRCB, allocations are based on flows, TSS and COD parameters. The cost of service allocation performed for the City's retail service area users is also consistent with the system-wide proportionate use approach used by MWWD in allocating wastewater system revenue requirements between the City and the PAs.

Once the user class cost responsibility is determined, then the next step, discussed in the next section, is to design user rate schedules to recover the revenues required from each user class.

Section 8
Rate Design

The revenue requirements and cost of service analysis described in the preceding sections of this report provide a basis for the design of wastewater rates. Rate design involves the development of rate schedules for each user class so as to recover the annual cost of service determined for each user class. In this Study, the focus of rate design is on the development of rate schedules for each of the City's retail service user classes, which was accomplished with input from the stakeholders' group. This section of the report discusses proposed wastewater rate structures, presents a schedule of rates for the City's user classes, and analyzes the impact on user classes due to the proposed changes in the user classifications, cost allocation and rate design.

RATE STRUCTURE

Rate structures need to be fair and equitable to ensure that every user class pays its fair share of costs. In addition, rate structures should be easy to understand, simple to administer, and comply with regulatory requirements. A review of the existing rate structures provides insights into the equitability of the current methodology and the changes, if any, that need to be made. The existing rate structure was discussed in detail in Section 3. The proposed rate structures are discussed in the following subsections.

Proposed Rate Structure

The proposed rate structures for all of the City's user classes will include both a fixed charge in the form of a base fee and a variable charge in the form of a usage rate. In other words, the annual revenues required from each user class presented in Table 7-7 would be recovered through a combination of a fixed monthly base fee and variable usage rate. The base fee and the proposed usage rate for the various user classes are discussed in detail.

Base Fee

A base fee is a cost recovery mechanism that is included in the rate structure to recover certain fixed and indirect costs. They provide a stable source of revenues independent of usage. We recommend that the City continue its existing practice of applying a monthly base fee to all its users. However, we recommend that the City modify its practice of applying different base fees to different user classes. Instead, we propose that the City apply a uniform monthly base fee to all its users.

Wastewater utilities incur *direct* costs that vary with changes in the quality and volume of flows received and *indirect* costs that typically do not change with flow characteristics. Direct costs are variable expenditures that include costs associated with collection, conveyance, treatment, and disposal operations. Indirect costs are fixed expenditures that relate to operational support activities including accounting, sewer billing, customer service, and administrative and technical support.

The indirect costs are essentially common-to-all costs that are independent of user class characteristics. A base fee provides a mechanism for recovering these common-to-all costs and ensures a stable source of user revenues for the utility. To determine the monthly base fee, the City's fixed indirect costs need

to be identified. The City's FY 2002 indirect costs that are used to determine the monthly base fee are estimated based on the Muni indirect O&M costs and the City's share of Metro indirect O&M costs. The City's indirect costs for FY 2002 are estimated at $32 million. Table 8-1 presents details of the costs included in the indirect costs.

TABLE 8-1 ESTIMATION OF INDIRECT COSTS USED TO DETERMINE BASE FEE

Description	Amount FY 2002 $
Muni Indirect O&M (Management, Administration & Support) - Inflated	**$1,260,000**
Metro Indirect O&M (Management, Administration & Support): City's Share	
Metro Admin	17,101,000
Central Support Facility	4,002,000
Technical Services Admin	2,426,000
Equipment Purchases & Income Credits	(1,092,000)
Other City Depts. Applicable to Sewer	3,396,000
General Accounting	243,000
Clean Water Program Admin	4,496,000
City's Share of Metro Indirect O&M (Inflated)	**$30,571,000**
Total Estimated City Indirect Costs allocated to Base Fee ($1,260,000 + $30,571,000)	**$ 31,831,000**

As mentioned in the discussion of issues in Section 6, the stakeholder group preferred to set the monthly base fee at under $10.00 and hence only 50 percent of Metro's Clean Water Program Administration costs were used in estimating the City's share of Metro indirect costs.

Since the indirect costs are common to all users, we propose that these costs be shared equally by all the City's user accounts. The monthly base fee is obtained by dividing the FY 2002 indirect costs by the total number of annual City's user accounts. The estimated monthly base fee of $9.93 for FY 2002 is shown in Table 8-2.

Usage Rate

The usage rate is the rate determined for each user class to recover the City's variable direct costs. The annual estimated FY 2002 revenues required, less annual base fee revenues, are the revenues that need to be recovered through a usage rate. Table 8-3 shows the Base Fee revenues and the usage rate revenues for FY 2002.

TABLE 8-2 ESTIMATED MONTHLY BASE FEE FOR FY 2002

Description	FY 2002
City's Estimated Indirect Costs	$31,831,000
City's Estimated User Accounts	267,123
City's Monthly Base Fee (1)	$9.93

NOTE:
(1) Annual indirect costs divided by (267,123*12)

TABLE 8-3 SUMMARY OF ESTIMATED BASE FEE AND USAGE CHARGE REVENUES

Description	Amount $ (FY 2002)
City's O&M Cost of Service	$130,040,000
Less City's Indirect Costs (1)	($31,831,000)
City's O&M less Indirect Costs	$98,209,000
City's Capital Cost of Service	$63,716,000
City's Revenues Required from Usage Rates	$161,925,000

NOTE: (1) Indirect costs to be recovered from all users through Base Fee.

Usage rates are developed for each user class based on the principle of maintaining inter-class revenue neutrality. This means that each user class would only pay its assigned share of costs of service (Refer Table 7-7 for revenues required from each user class). Since a portion of the revenues required from each user class is to be recovered through uniform monthly base fees, each user class' usage rate needs to be designed to recover only that portion of revenues that is not recovered through the base fee.

Annual base fee revenues for each user class for FY 2002 are estimated based on the number of accounts in a given class and the proposed monthly base fee of $9.93. The portion of revenues to be recovered through usage rates is then determined by deducting the annual base fee revenues from the user class's FY 2002 cost of service. Table 8-4 shows the total assigned costs of service amount, the annual base fee revenues and the annual usage revenues.

TABLE 8-4
USER CLASS COST OF SERVICE, BASE FEE REVENUES AND USAGE REVENUES

User Class Description	Total Sewer Revenues $	Annual Base Fee Revenues $	Annual Usage Revenues $
Single Family Residential	77,497,118	26,374,993	51,122,125
Multiple Family Residential	56,187,202	3,575,992	52,611,210
Commercial/Industrial (< 25,000 gpd discharge)	34,054,476	1,861,518	32,192,958
Commercial/Industrial (> 25,000 gpd discharge)	26,017,205	17,874	25,999,331
Total Annual User Revenues	**193,756,001**	**31,830,377**	**161,925,624**

SFR and MFR residential users are a homogenous group with similar strength characteristics and user rates can be established based on the usage revenues required and the estimated annual volume of flows. However, commercial/industrial users vary significantly in terms of both the volume of discharge and the strengths of TSS and COD parameters. Hence it would not be fair or equitable to establish a uniform sewer rate for the entire commercial/industrial class. User rates have to be established for each of the proposed 110 user classes in the user class matrix. In addition, SWRCB rules require that sewer rates be computed individually for each of the commercial/industrial users that discharge greater than 25,000 gpd of flow. The design of usage rates for the various user classes is discussed in the following subsections.

SFR Usage Rate and Computation of Bi-monthly Wastewater Charge

The proposed SFR sewer usage rate is estimated based on a 30-day average winter water usage with a usage cap of 14 hcf. The SFR user class annual wastewater flow is estimated as 100 percent return of annualized 30-day winter water usage. The proposed SFR usage rate for FY 2002 is estimated at $2.22 per hcf of water. The usage rate is computed by dividing the estimated SFR FY 2002 usage revenue requirement by the annualized billable winter water usage estimated using a 14 hcf usage cap. Table 8-5 presents the estimated SFR cost of service, water usage at various caps including the recommended 14 hcf usage cap, and the sewer rate.

The City should retain its existing method of computing monthly SFR wastewater charges, but with a monthly usage cap of 14 hcf instead of the existing monthly usage cap of 10 hcf. As in the existing method, winter water usage during the months of December through March would be obtained and the 30-day average usage would be computed. The $2.22 per hcf wastewater rate would then be applied to this 30-day average water usage to determine a SFR user's monthly usage charge. However, the portion of the 30-day average usage that exceeds the 14 hcf cap would not be billed. For instance, a SFR user with a 10 hcf, 30-day usage would be billed a monthly SFR *usage* charge of $22.20. The total monthly SFR wastewater charge for that user including the monthly base fee of $9.93 would be $32.13. With the proposed usage cap set at 14 hcf, the maximum monthly wastewater charge (including the

monthly base fee) a SFR user can be billed is $41.01.

TABLE 8-5 DETERMINATION OF SFR USAGE RATE

Class	Monthly Water Usage Cap (HCF)	Annual Wastewater Flow (1) (HCF)	Annual Revenue Required ($)	Monthly Sewer Rate ($)
SFR	10	20,088,909	51,122,125	2.55
	11	21,040,675	51,122,125	2.43
	12	21,835,290	51,122,125	2.35
	13	22,508,166	51,122,125	2.28
	14	23,070,372	51,122,125	2.22
	15	23,537,402	51,122,125	2.18
	16	23,926,962	51,122,125	2.14

(1) Annual Wastewater Flow computed based on annualized 60-day Winter Water Usage and is estimated as 100 % of annualized winter water usage.

MFR Usage Rate and Computation of Monthly Wastewater Charge

The MFR Usage Rate is estimated based on annual MFR usage revenues required and estimated annual water use. Typical MFR wastewater flow is 95 percent of annual metered water usage. The proposed MFR usage rate for FY 2002 is $2.77 per hcf of water. Table 8-6 shows the determination of MFR usage rate per hcf of water.

TABLE 8-6 DETERMINATION OF MFR USAGE RATE

	Annual Wastewater Flows $	Annual Usage Revenues $	MFR Rate $/hcf of WW	MFR Rate $/hcf of Water
Multi-Family Residential MFR Rate per hcf of Water (1)	18,116,067	52,611,512	$2.91	$2.77

NOTE:
(1) MFR Rate per hcf of Water = $/hcf of Wastewater * 95%

To compute monthly wastewater charges, the usage rate of $2.77 per hcf of water is directly applied to the user's water consumption. For example, for a MFR user with monthly water usage of 20 hcf of water, the usage charge is $55.40. With the inclusion of the $9.93 monthly base fee, the total monthly wastewater charge would be $65.33. For a MFR user with a return rate different than 95 percent return to sewer, the usage rate would be

($2.77/0.95) x Return factor x Water Usage

For an MFR user with 20 units of water use per month and a return factor of 90 percent the usage charge would be

(2.77/0.95) x 0.90 x 20 = $52.48

With the inclusion of the $9.93 monthly base fee, the total monthly wastewater charge would be $62.41.

Commercial/Industrial (< 25,000 gpd) Usage Rate and Computation of Monthly Wastewater Charge

The development of wastewater rates for the commercial/industrial(≤ 25,000 gpd) user class involves a two step process, which includes the development of user class unit costs for flow, TSS and COD and the determination of wastewater rates. The FY 2002 annual *usage* revenue requirement estimated for the commercial/industrial(≤ 25,000 gpd) user class is first allocated to flow, TSS and COD. The cost allocated to each parameter is then divided by this user class' annual flows and loadings to derive the unit costs. Table 8-7 shows the development of commercial/industrial(≤ 25,000 gpd) user class unit costs for the three parameters.

TABLE 8-7 DEVELOPMENT OF USER CLASS UNIT COSTS OF FLOW, TSS AND COD

User Class Description	Usage Revenues $	Flow Revenues $	TSS Revenues $	COD Revenues $	Unit Costs Flow $	Unit Costs TSS $	Unit Costs COD $
Commercial/Industrial (≤ 25,000 gpd discharge)	32,192,958	19,563,661	6,647,846	5,981,452	$2.0263	$0.3425	$0.1236

Based on the unit costs determined for the commercial/industrial(≤ 25,000 gpd discharge) user class, wastewater rates are computed for each TSS/COD strength range in the matrix. The rates are computed for each TSS/COD strength range based on the mid-point strength of the range. Table 8-8 shows the development of rates for the classes in the matrix assuming 100 percent return to sewer.

In computing monthly wastewater charges, the user's wastewater flows are first determined by applying the user's assigned return to sewer percentage to monthly water usage. The rate specific to the user's

TABLE 8-8 DEVELOPMENT OF COMMERCIAL/INDUSTRIAL RATE MATRIX (1)
(FY 2002)

(mg/l)		TSS 0-100	TSS 101-200	TSS 201-300	TSS 301-400	TSS 401-500	TSS 501-600	TSS 601-700	TSS 701-800	TSS 801-900	TSS 901-1000
COD	COD	A	B	C	D	E	F	G	H	I	J
0-200	AA	$2.21	$2.43	$2.64	$2.85	$3.06	$3.28	$3.49	$3.70	$3.91	$4.13
201-400	BB	$2.37	$2.58	$2.79	$3.00	$3.22	$3.43	$3.64	$3.85	$4.07	$4.28
401-600	CC	$2.52	$2.73	$2.95	$3.16	$3.37	$3.58	$3.79	$4.01	$4.22	$4.43
601-800	DD	$2.67	$2.89	$3.10	$3.31	$3.52	$3.74	$3.95	$4.16	$4.37	$4.59
801-1000	EE	$2.83	$3.04	$3.25	$3.46	$3.68	$3.89	$4.10	$4.31	$4.53	$4.74
1001-1200	FF	$2.98	$3.19	$3.41	$3.62	$3.83	$4.04	$4.25	$4.47	$4.68	$4.89
1201-1400	GG	$3.13	$3.35	$3.56	$3.77	$3.98	$4.20	$4.41	$4.62	$4.83	$5.05
1401-1600	HH	$3.29	$3.50	$3.71	$3.92	$4.14	$4.35	$4.56	$4.77	$4.99	$5.20
1601-1800	II	$3.44	$3.65	$3.87	$4.08	$4.29	$4.50	$4.71	$4.93	$5.14	$5.35
1801-2000	JJ	$3.59	$3.81	$4.02	$4.23	$4.44	$4.66	$4.87	$5.08	$5.29	$5.51
2001-2200	KK	$3.75	$3.96	$4.17	$4.38	$4.60	$4.81	$5.02	$5.23	$5.45	$5.66

NOTE: (1) The rate for each TSS/COD range is calculated based on mid-point loading of the range.

TSS and COD strength is then selected from the matrix and applied directly to the computed monthly wastewater flows. Table 8-9 shows a sample monthly sewer charge calculation for a user with a monthly water usage of 25 hcf, an assigned return to sewer of 80%, TSS of 380 mg/l and a COD of 620.

TABLE 8-9 SAMPLE CALCULATION OF MONTHLY WASTEWATER CHARGE

Monthly Water Usage (hcf)	25
Estimated Wastewater Flows (hcf) (1)	20
Wastewater Rate ($ per hcf) (2)	3.31
Monthly Wastewater Usage Charge (3)	66.20
Monthly Base Fee	9.93
Total -Monthly Wastewater Charges (4)	**$76.13**

NOTE:
(1) Based on an assigned 80% return to sewer.
(2) Based on an assigned TSS of 380 mg/l and a COD of 620 mg/l.
(3) Estimated Monthly flows times $3.31.
(4) Monthly usage charge plus monthly base fees.

Commercial/Industrial (> 25,000 gpd discharge): Wastewater charges for Commercial/Industrial users discharging more than 25,000 gpd are computed on an individual basis. Based on the cost of service unit costs shown in Table 7-6 of Section 7, wastewater charges are computed for each user individually. The annual wastewater charges computed individually for each large user account are included in Appendix 8-B. A sample monthly wastewater charge calculation for a large user with TSS strength of 640 mg/l and COD strength of 2,000 mg/l is shown in Table 8-10.

TABLE 8-10 SAMPLE MONTHLY CHARGE CALCULATION FOR LARGE USER

Monthly Flow (hcf)	TSS (mg/l)	TSS (lbs)	COD (mg/l)	COD (lbs)	Total Monthly Charge (1) $	Monthly Base Fee $	Monthly Usage Charge (2) $
1,064	640	4,249	2,000	13,279	$5,558.86	$9.93	$5,548.93

Note:
(1) Total Monthly Charge computed based on the proposed cost of service unit costs: Flow - $2.1403/hcf, TSS - $0.3652/lb, and COD - $0.1303/lb.
(2) Monthly Usage Charge is Total Monthly Charge less Monthly Base Fee.

ADEQUACY OF PROPOSED RATES AND CHARGES

The rates as proposed in this report should generate adequate wastewater user revenues to meet projected requirements through FY 2003. We recommend that the City conduct a financial review during FY 2003 to review program changes and adjustments, and the adequacy of expected revenues for FY 2004 and subsequent years.

IMPACT ANALYSIS

Black & Veatch performed an impact analysis to evaluate the impact of the proposed changes to user classification, the changes to the SFR usage cap level, the introduction of the COD parameter and the changes in rate design. The impacts of each of these changes among user classes and within user classes are discussed below.

User Classification

The proposed changes to user classification relate primarily to commercial/industrial user classes and hence there is no impact on the SFR and MFR residential user classes due to user classification changes. In the proposed classification, commercial/industrial users with greater than 25,000 gpd of

discharge have been categorized as large users into a separate class as required by the SWRCB revenue program. These users may see an increase or decrease in their bi-monthly wastewater charges depending on whether they are at the low or high end of the TSS/COD range. The change is due to the fact that charges are to be computed on their actual TSS/COD strengths instead of the existing method where charges are based on the user class rate matrix.

Commercial/industrial users with less than 25,000 gpd may see an increase or decrease in bi-monthly charges due to the fact that users in the proposed classification are categorized based on TSS/COD instead of TSS/Return to Sewer. This leads to reconfiguration of users within the matrix. For instance two users who belong to the same TSS/Return to Sewer class in the existing user class matrix may, in the proposed classification scheme, belong to two different classes due to the differences in their COD strengths.

Usage Cap

The usage cap applies only to the SFR user class and hence the proposed change to the usage cap level would not impact the other user classes. However, it would impact the users within the SFR class. The increase in the level of the cap from 10 to 14 hcf results in the lowering of per-unit usage costs, which would benefit all SFR users with water usage less than 10 hcf per month. Since usage up to 14 hcf is to be billed under the proposed method instead of the existing 10 hcf, bills could be higher for users with high water usage.

COD Parameter

The introduction of the COD parameter will result in revenue redistribution between residential and commercial/industrial user classes and also impact certain user classes within the commercial/industrial category. Many commercial/industrial user classes have high concentrations of COD. Residential TSS (265 mg/l) is comparable to average system TSS (269 mg/l). However, Residential COD (450 mg/l) is lower than system COD (610 mg/l). Therefore, introduction of the COD parameter results in a shift in cost burden from the residential to the commercial/industrial user classes.

Within the commercial/industrial category, there is wide variability in TSS and COD strengths and the introduction of COD may result in sewer charge increases for user classes with high COD and sewer charge decreases for user classes with low COD.

Rate Design

The proposed fee structure with uniform base fee for all users will result in sewer charge changes for many user classes. The existing 2001 monthly base fee for MFR and commercial/industrial users is just $0.51, hence the proposed uniform monthly base fee of $9.93 would impact all non-SFR user classes. However, the recovery of a larger portion of user class cost of service through the base fee will lead to lowering of user class unit costs – a benefit for higher volume dischargers in each class.

The overall impact on any given user or user class depends on one or more of the factors discussed above. The combination of changes proposed, including user reclassification, introduction of COD and the establishment of uniform base fees, however, results in a fair and equitable cost allocation among the various user classes.

Table 8-11 shows monthly SFR wastewater charges under the proposed rates and existing 2001 rates at different levels of water usage. Under the proposed rate structure, after March 2002, all SFR users will benefit as shown in Table 8-12. Table 8-12 also shows the impact on a sample of commercial/industrial user types and on SFR and MFR user classes based on the proposed method and existing method using March 2002 rates. Most MFR customers will benefit under the proposed rates. Impacts on commercial customers are mixed depending on their flow and strength.

TABLE 8-11 COMPARISON OF PROPOSED RATES AND EXISTING 2002 RATES

Monthly Usage (HCF)	Proposed Method Monthly Charge (FY 2002) $	Existing Method Monthly Charge (FY 2002) $	Monthly Charge Difference $	Percent Charge Difference %
1	12.15	12.71	-0.56	-4.4%
2	14.37	15.99	-1.62	-10.1%
3	16.59	19.27	-2.68	-13.9%
4	18.81	22.55	-3.74	-16.6%
5	21.03	25.83	-4.80	-18.6%
6	23.25	29.11	-5.86	-20.1%
7	25.47	32.39	-6.92	-21.4%
8	27.69	35.67	-7.98	-22.4%
9	29.91	38.95	-9.04	-23.2%
10	32.13	42.23	-10.10	-23.9%
11	34.35	42.23	-7.88	-18.7%
12	36.57	42.23	-5.66	-13.4%
13	38.79	42.23	-3.44	-8.2%
14	41.01	42.23	-1.22	-2.9%
15	41.01	42.23	-1.22	-2.9%
16	41.01	42.23	-1.22	-2.9%

Note:
Proposed and Existing Monthly Charges include monthly base fee and usage fee. The proposed charges are based on a usage cap of 14 hcf and a 7.5% revenue requirement adjustment. The existing monthly charge is based on 10 hcf usage cap.

IMPACT ON SFR USER CLASS

TABLE 8-12 IMPACT ON A SAMPLE OF USER CLASSES (1) PROPOSED METHOD VS. EXISTING METHOD – 2002 RATES

User Class	Wastewater Flow	Class TSS Range MG/L	Class COD Range MG/L	Monthly Charges (2) Proposed Method 2002	Monthly Charges (2) Existing Method 2002	Difference Proposed vs Existing $	Difference Proposed vs Existing %
<= 25,000 gpd Commercial (2)							
Hospitals	(hcf)	101-200	401-600				
Lo. Monthly Flow	70			$201.03	$200.05	$0.98	0%
Med Monthly Flow	200			$555.93	$570.55	-$14.62	-3%
Hi. Monthly Flow	750			$2,057.43	$2,138.05	-$80.62	-4%
Printing/Graphics Services		201-300	201-400				
Lo. Monthly Flow	10			$37.83	$31.95	$5.88	18%
Med Monthly Flow	60			$177.33	$188.95	-$11.62	-6%
Hi. Monthly Flow	200			$567.93	$628.55	-$60.62	-10%
Offices/Auto Service Stations		201-300	401-600				
Lo. Monthly Flow	15			$54.18	$47.65	$6.53	14%
Med Monthly Flow	60			$186.93	$188.95	-$2 02	-1%
Hi. Monthly Flow	200			$599.93	$628.55	-$28.62	-5%
Auto Dealers		801-900	401-600				
Lo Monthly Flow	10			$52.13	$49.45	$2 68	5%
Med Monthly Flow	60			$263.13	$293.95	-$30.82	-10%
Hi. Monthly Flow	150			$642.93	$734.05	-$91.12	-12%
Retail/Commercial Businesses		201-300	1001-1200				
Lo. Monthly Flow	15			$61.08	$47.65	$13.43	28%
Med. Monthly Flow	60			$214.53	$188.95	$25.58	14%
Hi. Monthly Flow	250			$862.43	$785.55	$76.88	10%
Hotels		301-400	601-800				
Lo. Monthly Flow	60			$208.53	$205.75	$2.78	1%
Med. Monthly Flow	250			$837.43	$855.55	-$18.12	-2%
Hi. Monthly Flow	700			$2,326.93	$2,394.55	-$67.62	-3%
Mini-Shopping Centers		601-700	1001-1200				
Lo. Monthly Flow	30			$137 43	$129.85	$7.58	6%
Med. Monthly Flow	70			$307 43	$302.25	$5.18	2%
Hi. Monthly Flow	200			$859 93	$862.55	-$2.62	0%
Industrial Laundry		601-700	1201-1400				
Lo. Monthly Flow	150			$671.43	$647.05	$24.38	4%
Med Monthly Flow	350			$1,553.43	$1,509.05	$44.38	3%
Hi. Monthly Flow	800			$3,537.93	$3,448.55	$89.38	3%
Food Service Establishments		601-700	1801-2000				
Lo. Monthly Flow	15			$82.98	$65.20	$17.78	27%
Med Monthly Flow	50			$253.43	$216.05	$37.38	17%
Hi. Monthly Flow	150			$740.43	$647.05	$93.38	14%
Supermarkets		801-900	1601-1800				
Lo Monthly Flow	30			$164.13	$147.25	$16.88	11%
Med Monthly Flow	70			$369.73	$342.85	$26.88	8%
Hi. Monthly Flow	200			$1,037.93	$978.55	$59.38	6%
Residential							
Multi Family Residential Class		201-300	201-400				
Lo. Monthly Water Usage	55			$162.28	$160.60	$1.68	1%
Med Monthly Water Usage	500			$1,394.93	$1,455.55	-$60.62	-4%
Hi. Monthly Water Usage	1000			$2,779.93	$2,910.55	-$130.62	-4%
Single Family Residential Class (3)		201-300	201-400				
Lo. Monthly Water Usage	4			$18.81	$22.55	-$3.74	-17%
Med. Monthly Water Usage	10			$32.13	$42.23	-$10.10	-24%
Hi. Monthly Water Usage	14			$41.01	$42.23	-$1.22	-3%

Note:
(1) The monthly charges computed under proposed and existing rate scenarios reflect the 7.5% revenue adjustment effective March 2002
(2) Businesses other than those listed may fall in the strength ranges indicated
(3) The proposed water usage cap is 14 hcf and the existing usage cap is 10 hcf

REVENUE PROGRAM

The revenue program developed as part of this Study is designed to meet all aspects of SWRCB guidelines including identification of costs, user classification, allocation of costs, and design of rate structures.

Black & Veatch compiled and reviewed the City's financial information to ensure that annual O&M costs including replacement costs are identified and aggregated by wastewater functions. Other costs including capital costs related to expansion of system facilities, debt service costs and operating and capital requirements were also reviewed to ensure that they are aggregated and maintained in accordance with SWRCB guidelines.

The City's user classification was reviewed. Users and their associated flows and loadings were identified and where necessary, users were reclassified to ensure compliance with SWRCB revenue program requirements. In this Study, users with similar characteristics have been identified and grouped so that the costs of the system could be allocated to the classes in proportion to the user classes' demand on the wastewater system.

In accordance with the revenue program requirements, the City's annual costs were identified and allocated to the parameters of flow, TSS and COD in proportion to the percentage of costs that these three parameters represent. The functional-design method has been used to allocate the City's retail service area costs to the parameters. The allocation of costs is consistent with the proportional and system-wide allocation approach, which has been approved by the SWRCB and that is currently outlined in the contractual agreements between the City and its PAs.

The rate structures designed in this Study incorporate the COD parameter as mandated by the SWRCB and provide for a system of user charges that enable fair and equitable recovery of costs from the various user classes.

Overall, this Study conforms to the revenue program guidelines in that it complies with the requirements mandated by the SWRCB and is designed to ensure recovery of costs in proportion to services received.

The preceding sections of this report discussed all aspects of the Study from financial planning through development of wastewater rates. The user charge system that is designed to recover the costs of the system includes not only wastewater user rates but also one time capacity fees that are charged to users that join the system. Black & Veatch reviewed the City's capital projects, capacity of various facilities, the existing capacity fee design and the adequacy of the City's existing capacity fees. The capacity fee review is discussed in the final section of this report.

Section 9
Capacity Fee Review

As indicated in Section 5, one of the sources of system revenues is the one-time capacity (developer) fee that is applied to all users that connect to the City's Regional Wastewater System. This section of the report outlines the existing capacity fee structure, the regulatory requirements, computational methods, the approach used in this Study to compute capacity fees and the capacity fee schedule.

The City applies two types of one-time fees to its wastewater system users: Capacity Fees and Connection Fees. A capacity fee is a one-time fee which is charged for new, additional or larger connections to the City's wastewater system. Capacity Fees recover the costs associated with providing additional facility capacity to new users and existing users requiring additional capacity. Connection fees are used to recover costs associated with the physical installation of lateral connections to sewer mains, and can be thought of as "plumbing charges". The scope of this study is limited to a review of the Capacity Fees.

CAPACITY FEES

The City's users and the PAs are required to pay capacity charges in proportion to their anticipated use of the system. The PAs system of capacity charges includes both an Existing Capacity Charge (ECC) and a New Contract Capacity Charge (NCCC). PAs are charged an ECC for a specified period and are billed annually at the beginning of the calendar year. PAs that require new contract capacity are charged a NCCC in the amount required to provide the New Contact Capacity. The terms of determining the ECC and NCCC are outlined in the Regional Wastewater Disposal Agreements between the City and the PAs that participate in the regional system. The following sections of the report relate specifically to the City's service area Municipal Capacity Charges.

Existing Capacity Fees

The City's existing capacity charge, based on Equivalent Dwelling Units (EDU), is a one-time charge determined as per the City's Municipal Code Section 64.0410. An EDU is defined in terms of volume of wastewater flow discharged or the number of plumbing fixture units, which equate to an EDU. The City's EDU's are defined as follows:

- 280 gallons per day of wastewater flows = 1 EDU for single family residences
- Twenty Plumbing Fixture Units = 1 EDU for non residential users

The minimum capacity assigned to any sewer connection is one EDU. MFR units having individual, City read water meters are charged one EDU per unit, while MFR units that share a common water meter are charged based on a density-adjusted formula. The formula is based on the theory that the more units per acre, the smaller the unit and therefore the less sewer capacity needed. The Departmental Instruction governing the application of sewer capacity charges is included as Appendix 9-1.

EXHIBIT 31

From: Sharon Brown
To: Hedy Griffiths
Date: Monday, May 15, 2000 11:08:25 AM
Subject: Re: Cost of Service Study

Hedy,

I am assuming that they are trying to characterize the flow. They want to know flow, COD and SS, infiltration and inflow data, growth rates and the masterplan. They also want the number of service connections, and detailed account data but I assume they are getting that from the Water Dept. (and that is what I advised Eric). They want COD and SS for the larger (more than 25,000 gpd) water users and for industrial users with discharge permits. I think Barbara Sharatz can give them that if its available.

Also Peggy suggested I check with Walter Knopka about plant capacities, flow and growth rates... or with Alan Langworthy who might have a report for the NPDES permit. So I shall.

>>> Hedy Griffiths 05/12 4:44 PM >>>
Sorry, my brain burped. Yes Sharon - this info should be requested (preferably by Dennis) in writing to Guann Hwang of the Flow Modeling Group.

Actually, I am a little confused, why is this requested for the Sewer Cost of Service group.

I think there is another party in the City - WWC who does I/I studies - Bob, do you recall?

>>> Robert Cherwink 05/12/2000 1:19:53 PM >>>
I have meter data, I haven't done any analysis as to I&I, and I couldn't do 3 years worth by midweek. I thought this is what the Flow Modeling Section was suppose to take over anyhow.

Bob C.

>>> Sharon Brown 05/12 8:11 AM >>>
Bob,

We have a data request from Dennis Kahlie for the Sewer Cost of Service Study. Hedy thought you could provide me with the following information:

- infiltration and inflow data for the last three years, City only.

Do you have this, and the source? Thanks. I need this by mid-next week.

EXHIBIT 32

Sewer Cost of Service & Rate Design Services

City of San Diego
Metropolitan Wastewater Department

February 2000

BLACK & VEATCH
Corporation

BLACK & VEATCH CORPORATION
6 Venture, Suite 315, Irvine, CA 92618 (949) 788-4234 Fax (949) 753-1252

February 18. 2000

Mr. Dennis H. Kahlie
Utilities Financing Administrator
City of San Diego
202 C Street, MS 7B
San Diego, CA 92101

Dear Mr. Kahlie:

Black & Veatch is pleased to present this proposal to the City of San Diego (City) for a Sewer Cost of Service and Rate Design Services. We believe the City's needs can best be met by the Black & Veatch team. Our unique combination of qualifications and experience will ensure successful implementation of forward-looking solutions that will be of benefit to the City and its constituents.

The City needs to develop a fair and equitable revenue program with the following characteristics:

- Recovers adequate revenues to cover operating and capital costs
- Provides equitable distribution of costs to users in proportion to the cost incurred in providing service
- Minimizes rate shock or impacts to customers
- Meets State Water Resources Control Board guidelines
- Is easy to implement and administer
- Designed with a renewed approach so that stakeholders can develop objective perceptions and develop confidence in the consultant and recommendations
- Is easy to understand, is acceptable to and supported by the public and politicians
- Meets City's policies

Our proposal addresses each of these needs. We are confident that our project team will meet and exceed the City's expectations and requirements. The Executive Summary briefly discusses how we will address your needs. The sections following the Executive Summary present our scope of services and all other information requested by the City.

We are eager to provide value-added benefits to the City. If we can be of further assistance please call me at (949) 788-4234.

Very truly yours,
BLACK & VEATCH

Sudhir Pardiwala, P.E.
Senior Project Manager

Executive Summary

The City of San Diego (City) wants to develop a wastewater revenue program that is fair and equitable and meets State Water Resources Control Board (SWRCB) requirements.

Heightened environmental interest and awareness, economic considerations, and increased expectation of fairness and equity, have increased customers' interest in the rates and rate design process. This has had a substantial impact on utilities and their customers. Sewer and water charges cannot be taken for granted. Increasingly, social considerations play an important part in rate design and are used to help successfully implement rates with minimal political impacts. An important element of the project is to educate and obtain input from stakeholders so that they understand and support the changes in rate structure. The City needs a consultant with strong technical and financial qualifications and experience to perform a cost of service and rate design analysis. The cover letter highlights the City's needs. This Executive Summary presents how we will provide value-added solutions that will benefit the City's constituents.

The Team

We have assembled a dynamic team to conduct the sewer cost of service and rate design study. The composition of the team includes:

- A strong and committed Project Manager with over 23 years of experience. Much of that experience is on similar projects in California. He is currently assisting the City of San Jose and the County of San Bernardino with similar studies. Some of his other major projects in California include Orange County Sanitation District, Carlsbad Municipal Water District, and Cities of Oceanside and Chula Vista. He has a consistent record of producing quality work on time and within budget.

- An experienced public outreach subconsultant, Katz & Associates (Katz). Katz has many years of experience working with the City. Their knowledge of the issues and sensitivity to political needs will be of great benefit to obtain approval of the revenue program. We have conducted outreach programs with stakeholder groups in many major cities to effectively implement solutions.

- Rate study experts from Black & Veatch's Management Consulting Division who will review the project deliverables throughout the course of the study. The City will derive the benefit from the experience these experts have had in implementing solutions at major metropolitan cities throughout the United States. They are active members of the Finance and Rate Committee of the WEF.

- A technically qualified support staff with engineering and business qualifications that has performed dozens of similar cost of service studies in California. The ample resources we possess will ensure timely completion of the project.

Our Approach

Our cost of service approach involves four major steps - the identification of functional components of operating costs, allocation of the functional costs to cost components such as flow, Chemical

Oxygen Demand (COD), and Suspended Solids (SS), determination of the costs of service, and the allocation of component costs to the different customer classes.

Our approach, which has been honed by the completion and implementation of over 2,000 rate studies all across the United States will lead quickly and effectively to the desired solutions. The major elements of our approach include:

- Identification and fine tuning of objectives and issues
- Data compilation, review, and analysis
- Review of the financial plan
- Education of stakeholders and solicitation of stakeholder input
- Cost allocation to the functional cost components
- Design of rate structure and rate alternatives
- Assistance with presentation and implementation of the revenue program
- Assistance with approval of the revenue program by the SWRCB

Our Experience

Black & Veatch is the premier firm in the nation in the area of water and wastewater cost of service and rate studies. With a portfolio of over 200 cost of service studies in California and over 2,000 such studies across the nation, we have the breadth of experience, qualifications, credibility, and resources required to conduct a comprehensive study like the one desired by the District. We conduct rate studies for over 75 percent of the large metropolitan agencies in the country and many of these agencies use our rate model for financial planning and rate updates. The rate model has been developed with input from numerous agencies and provides features that make it user-friendly. The quality and functionality of this model is unmatched in the business.

With our use of our sophisticated business management tool, BISNET, we will provide effective project management by effectively managing both the project schedule and the budget, throughout the course of the project.

We will maintain a strong communication and working relationship with City staff, policy makers and stakeholders to ensure that there are no surprises and to achieve a result that is fair and equitable. The combination of a strong project team, our tried and tested approach, our years of rate study experience will enable us to satisfy the needs and exceed the expectations of the City.

A. Direct Experience of Firms

Black & Veatch

Black & Veatch has worked with numerous large municipalities, such as the City of Los Angeles and Orange County Sanitation District, conducting studies specifically for the purpose of reviewing cost allocation methodologies. Other agencies for which Black & Veatch has conducted cost of service rate studies include Imperial Beach, Port Hueneme, and Rialto, California. In addition, Black & Veatch has conducted over 2,000 rate studies throughout the U.S., each involving a review of the cost of service (COS) allocation methodologies.

Black & Veatch is currently performing cost of service studies for the cities of Windsor, Madera, and San Jose, California and County of Kauai, Hawaii. The City of Los Angeles has again retained Black & Veatch this year to develop for their wastewater enterprise, a rate model incorporating cost of service methodologies. The study for the County of Kauai involves reviewing and expanding their existing customer classes to achieve equitability among the classes. As part of the ongoing wastewater study for the City of San Jose, Black & Veatch recently developed an issues report that discusses various issues to be addressed during the cost of service rate study. One of the issues includes reviewing and expanding the City's customer classifications to meet SWRCB requirements for fairness and equity.

Black & Veatch has extensive experience in working with local, state and federal funding agencies. We have successfully obtained low interest loans, grants and debt financing to fund a variety of projects. We have working relations with lobbyists at both the federal and state level to facilitate grant appropriations. Black & Veatch offers expertise in packaging the loans and in expediting the loan approval process.

Black & Veatch has successfully applied for and obtained loans in the past under the State Revolving Fund (SRF) program. We have saved for our clients millions of dollars in interest costs and issuance expenses by effectively meeting loan requirements and getting loans approved in a short period of time. Most recently, we assisted the City of Rialto in obtaining over $22 million in SRF funds for their wastewater treatment plant expansion in a record time of three months. Other clients we have assisted in obtaining SRF funds include the City of Burbank, City of Corona, Orange County Water District, Elsinore Valley Municipal Water District, and the City of Riverside. Currently, we are assisting the Town of Windsor with their SRF loan application process for their wastewater treatment plant improvements.

B. Role of Subcontractor

Katz & Associates Inc.

Katz & Associates Inc. is a full service communications firm specializing in the development and implementation of public affairs programs to support public works and environmental projects. With headquarters in San Diego and offices in Las Vegas and Sacramento, Katz & Associates offers a diverse team of communications professionals with expertise in community relations, consensus building, stakeholder research, media relations, environmental review services, public process participation, government relations and coalition management.

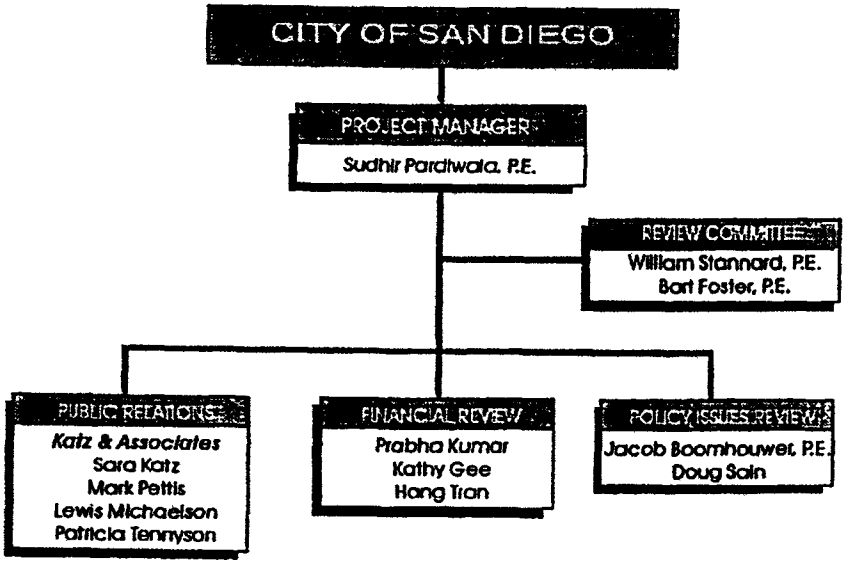
Katz & Associates will oversee all public involvement efforts for the project including providing strategic counsel to City staff, assisting the City stakeholder group formation, stakeholder interviews, and coordination and facilitation of all stakeholder meetings. They will also assist with the development of the Stakeholder Summary Report. The level of public involvement efforts required will be finalized in consultation with the City.

C. Working with Stakeholders' Group

Black & Veatch in collaboration with Katz & Associates designed, organized, coordinated, and facilitated a 14-member community working committee as part of the water rate study services performed for the Carlsbad Municipal Water District (District). The District received unanimous support from the committee for the open process used to involve the community in the rate structuring. Katz & Associates has been involved in a number of other public involvement programs in the San Diego region. They assisted the City of San Diego Water Department in forming a Public Advisory Group; coordinated twelve workshop meetings; scheduled more than 60 presentations; and assisted in media outreach activities. Katz & Associates also assisted the San Diego County Water Authority in community outreach efforts to gain community support for the $500 million emergency water storage project.

D. Personnel and Responsibilities

Black & Veatch has assembled and dedicated a highly experienced Project Team to perform the proposed study for the City. All team members have successfully performed studies of similar nature to those required by the City. A description of the roles and capabilities for each team member is provided in this section. An organization chart for our project team follows:



William G. Stannard, Review Committee

Mr. Stannard, Head of the Management Consulting Division, will serve in the quality control/project review committee. Mr. Stannard has extensive experience in managing complex financial and management studies. He has managed numerous comprehensive financial and management studies nationwide covering utility planning, cost of service and rates, capital improvement financing, and bond feasibility studies. He is a nationally recognized expert in utility rate design practices. He is currently serving as Vice-Chairman of WEF's task force that is updating the Financing and Charges for Wastewater Systems manual. Clients include Detroit, MI; Kansas City, MO; Bloomington and Columbus, IN; Cincinnati and Columbus, OH; and the Puerto Rico Aqueduct and Sewer Authority.

Bart Foster, Review Committee

Mr. Foster's principal area of experience has involved providing comprehensive financial and management consulting services related to cost of service, managing financial planning, and rate design studies for wastewater utilities. Mr. Foster's combined technical, financial, and computer skills have proven well suited to address the challenges facing municipally owned utilities. Some of his clients includes Detroit and Kalamazoo, MI; Columbus and Cincinnati, OH.

Sudhir Pardiwala, Project Manager

Mr. Pardiwala will serve as Project Manager on this assignment. He has over 23 years of experience with rate and financial studies in California. Mr. Pardiwala will be directly responsible for the execution of your project including presentation of results. He has strong communication abilities, has worked in public groups and committees to present the background, issues, concerns in rate setting and proposed alternatives, discussed impacts and provided leadership to achieve the results that lead to successful implementation. Some of Mr. Pardiwala's recent clients include the cities of San Jose, Carlsbad, Oceanside, Chula Vista, Del Mar, Encinitas, and special districts such as San Bernardino County, Ojai Valley Sanitary District. Mr. Pardiwala is thoroughly familiar with the requirements of EPA and the California Water Resources Control Board for wastewater rates and Proposition 218.

Jacob Boomhouwer, Policy Issues Review

Mr. Boomhouwer has over 25 years of experience with the firm, during which time he has served as consultant to all levels of government, municipal and investor-owned utilities, and industry. Mr. Boomhouwer will serve in consultative role to the project on specific policy issues. His recent clients include the cities of Imperial Beach, Los Angeles, Imperial, San Buenaventura and Fullerton, California. In addition, Mr. Boomhouwer's clients also include the Green Bay Metropolitan Sewerage District in Green Bay, WI; American Bottoms Regional Wastewater Facility in Sauget, IL; and cities in Phoenix, AZ. Mr. Boomhouwer has extensive experience with rate studies involving industrial wastewater flow.

Prabha Kumar, Financial Analyst

Ms. Kumar will assist with the financial analyses for the project. Her experience includes cost of service and rate studies, conducting feasibility, Activity Based Costing, economic analysis, and strategic planning studies. Her recent studies include water and wastewater cost of service studies for the cities of Cloverdale and Madera, CA. Other clients she has worked with include Buena Sanitation District, Long

Beach Water Department and Elsinore Valley Municipal Water District in California, American Bottoms in Sauget, IL, and Water Services Department, City of Phoenix, in Arizona.

Kathy Gee, Financial Analyst

Ms. Gee will assist with the financial analyses for the project. Her experience includes modeling for rate studies and industrial pretreatment studies, and bond feasibility studies. Recent studies in which she has participated in include Goleta Water District, Ojai Valley Sanitary District, Carlsbad Municipal Water District, and County of San Bernardino, CA.

Hang Tran, Financial Analyst

Ms. Tran will assist with the financial analyses for the project. She has been involved in numerous wastewater rate and cost of service studies involving industrial wastewater flow. Ms. Tran is thoroughly familiar with the requirements of the California Water Resources Control Board for wastewater rates. Some of her recent projects include cities of Imperial Beach, Port Hueneme, Upland, Santa Ana, and Imperial, CA. Other clients include County of Kauai, HI and American Bottoms Regional Wastewater Facility in Sauget, IL.

Mark Pettris, Public Relations Committee

Mr. Pettris will head the public relation committee and coordinate day-to-day activities for the public involvement program. He will conduct all stakeholder interviews, coordinate aides briefings, and coordinate logistics for all Public Advisory Committee meetings. Mr. Pettris specializes in the coordination and implementation of community and media relations, public affairs and public information programs. Mr. Pettris currently handles public outreach campaigns for the Helix Water District Flume Replacement Project, the Oceanside Unified School District, and the Port of San Diego's Airport Master Plan.

Sara Katz, Public Relations Committee

Ms. Katz has spent 20 years in public outreach and has developed a recognized specialty in constructing effective community relations programs for public policy issues. She will oversee all public involvement efforts for the project and provide strategic counsel to City staff and the technical consultant. Ms. Katz will also assist with development of the Stakeholder Summary Report and provide assistance in the Comprehensive Study Report. She has served as a strategist on a number of public participation programs with public agencies in California, Nevada, Texas, Georgia and Florida. Ms. Katz has overseen the public participation programs, incorporating stakeholder involvement with the City of San Diego Strategic Plan for Water Supply; MTDB Mission Valley East Extension, and San Diego Unified Port District/Airport Master Plan.

Lewis Michaelson, Public Relations Committee

Mr. Michaelson is a professional meeting facilitator with 10 years experience in convening, facilitating and moderating workshops, public meetings, citizen advisory groups, and technical exchange meetings. Mr. Michaelson will assist in facilitating the Public Advisory Committee meetings. He is currently serving as a facilitator for the Southern Nevada Water Authority's Integrated Resource Planning Advisory Committee in Las Vegas, and for the Upper Chattahoochee Basin Group Lake Lanier Water Quality Study Citizens Review Committee.

Patricia Tennyson, Public Relations Committee

Ms. Tennyson provides facilitation services to various clients and has assisted with the coordination and facilitation of numerous public working committees. She will assist in facilitating the Public Advisory Committee meetings. Most recently, she served as the public affairs director of the San Diego County Water Authority, in which she served as a link between the Authority and its member agencies, other governmental entities, the media and the community at large. In addition, Ms. Tennyson interacted regularly with elected officials throughout the County and was the primary public affairs strategist for the Authority.

Doug Sain, Policy Issues Review

Mr. Sain's background includes providing government, public affairs and imaging consulting with an emphasis on public infrastructure and financing. Most recently, he served as the City of San Diego's Council Committee Consultant on Natural Resources and Culture, where he provided the Council and public with policy analysis about matters before the Committee, such as the City's wastewater, water solid waste, and others. Mr. Sain will serve in consultative role to the project on specific policy issues.

E. Approach to Completing Work

Project Understanding and Objectives

This section of our proposal presents our understanding of the issues and challenges involved in conducting the wastewater cost of service rate study for the City of San Diego (City), Metropolitan Wastewater Department (MWWD).

The City's current retail sewer charges are based on the last cost of service study performed in 1998. The sewer charges for the City's retail customers are based on flow and suspended solids (SS) but not on chemical oxygen demand (COD). The City currently has four categories of retail customers, which include single-family domestic, other domestic, commercial, and industrial customers. Single-family domestic customers have an individualized flat sewer rate, which is based on prior year's average winter water usage and SS concentration, and multi-family domestic customers are charged based on actual metered usage and SS concentration. Commercial and industrial customers are charged based on a rate matrix of SS concentrations and return-to-sewer component, based on actual metered water usage.

There is room for increasing equitability in the current rate structure. The City is therefore keen on a comprehensive cost of service study that would provide for equitable and fair allocation of costs to all the customers and would satisfy the State Water Resources Control Board (SWRCB) requirements. A comprehensive evaluation of the utility's revenue requirements, costs of providing service, and rate design based on sound engineering and economic principles will ensure that costs are fairly apportioned to various customer classes and rates are designed to equitably recover utility service costs.

There is no single fair and unique solution when designing rates. Rate structure alternatives that best meet the City's needs can be generated. The successful implementation of rates will be facilitated through public involvement and an outreach program involving stakeholders so that they understand the

cost of service and rate setting concepts and methods. The effort and time spent in educating stakeholders will pay for itself many times during implementation.

Objective

The objective of the work plan is to develop a fair and equitable revenue program that can be easily implemented and updated for the wastewater systems. Our team will work with the City staff to achieve the following objectives:

- **Revenue Plan.** Revenue sufficiency is a key element of the revenue plan. This ensures that enough revenues are available to meet the operating and capital expenses of the wastewater enterprise. The revenue plan should be based on the SWRCB guidelines and be in compliance with federal and state regulations and Clean Water Act requirements.

- **Fairness and Equity.** If rates are perceived to be fair, equitable users are more likely to support changes in rates and rates structure.

- **Reserves.** Reserve funding is an important element of a revenue program. It enhances equity since all existing users pay for use of the assets. Cash reserves are used to meet working capital requirements, provide the cash for rate stabilization, meet emergency requirements, and help in running a sound financial system. Adequate reserves also provide better ratings for issue of debt. Our approach will be to recommend an adequate level of reserves to meet the City's requirements.

- **Cost of Service.** The City desires a cost of service analysis that is based on sound cost-causative principles. The proposed rate structures should meet the requirements of Proposition 218. The Black & Veatch team with its strong engineering and business qualifications, and experience in assisting numerous agencies in California and across the U.S. is ideally suited to analyze the existing system and the relative load placed on the system by the different user classes.

- **Alternative Rate Structures.** An important objective of the study is to develop alternative rate structures and associated schedules of rates that provide for equitability amongst customer classes and meet the requirements of the revenue plan and MWWD's policy objectives. For each alternative, we will also review the impacts within each customer class.

- **Stakeholder Involvement** Involving the stakeholder group and obtaining their input throughout the rate study process will build support for the recommendations developed. Our team's experience in working with stakeholders and our presentation skills will be instrumental in building confidence amongst stakeholders so that council approval and implementation can be easily achieved.

Project Approach

Black & Veatch firmly believes that utilities can best manage costs and corresponding rate revisions through a combination of long-range financial and capital planning while utilizing the annual budgeting process to systematically implement approved plans. Comprehensive rate analyses permit better policy decisions to be made about a variety of subjects of interest to the City because impacts on rate payers are

readily determined prior to final decisions. The following sections highlight several key elements of our proposed approach that address stated objectives of the Department.

Strong Communication and Working Relationship with Staff, Policy Makers, and the Public

Black & Veatch welcomes the involvement of City staff and the stakeholder group during the study. We recognize such involvement as important for the exchange of ideas, the development of practical recommendations, and the smooth implementation of the new rates and charges.

Our project team will facilitate workshops, public forums and other public involvement activities throughout the study to educate the stakeholders about the rate design process and concepts and to seek their input. While the feedback will be valuable in decision making, it will also ensure customer buy-in. We will assist the City staff in evaluating policy decisions which influence the alternatives and final recommendations to be included in the final project report.

Consistent and Competent Project Management

The proposed project entails several different, yet interrelated, work efforts that will require effective coordination between City staff, the consultant team, the stakeholder group, and the public. As such, consistent and competent project management will be critical to the timely and successful completion of the project. Our management approach stresses communication, teamwork, objectivity, and accountability for meeting project objectives and includes the following:

- Assignment of key project team members including:
  - a strong project manager who will be responsible for facilitating a close working relationship between the City and Black & Veatch team and who is accountable to the City for meeting the schedule, budget, and technical requirements of the project.
  - a highly qualified staff with many years of combined experience providing quality assurance and technical support and a knowledgeable subconsultant to assist with public outreach.
- Development of procedures for regular and open communication between project team members and City staff; and
- Assurance of budget and schedule control through the project manager's use of Black & Veatch's sophisticated project accounting and management system (BISNET).

Identification and Development of Issues

A rate study's success depends largely on accurately identifying and classifying core issues and concerns that are relevant to the cost allocation and rate setting process. We have worked with large utilities such as the City of San Jose in identifying, defining, and addressing issues such as customer classifications, rate equitability, billing, and winter vs. annual usage based rate design. We, along with our sub-consultant

Katz & Associates, will work closely with the City, selected groups, and other stakeholders to identify and define issues, seek input on the issues, and develop solutions during the study.

MWWD Operational, Sewer Service and Capacity Charges Review

The first step in a cost of service and rate design study is to conduct a thorough review of documents pertinent to the study, such as financial and revenue plans; policy documents; past cost of service and rate study reports; capital improvement program (CIP) schedules and financing; and other operational data. We will also review the City's existing sewer service and capacity charges for cost recovery, equitability, conservation effect, and ease of implementation. We will compare the City's sewer and capacity charges with those of other comparable U.S. cities to obtain valuable insights into cost allocation methodologies and rate design trends.

Determination of Cost of Service Allocations and Rates

It is important to allocate all costs of service first to cost components and then to customer classes to design equitable rates. We propose to use defensible, cost-causative allocation methodologies, recommended by SWRCB and WEF, which recognize general design considerations employed by engineers when sizing wastewater facilities.

A utility generally incurs capital costs in direct proportion to the size of its facilities. In addition, utilities are normally operated on the same basis for which they are designed. The City's existing wastewater rate structure does not take into consideration a COD factor. The COD component can significantly impact wastewater treatment operation costs. Engineering knowledge of the considerations involved in the design and operations of the City's sewer system is important in assigning operating and capital costs to functional components and in subsequently determining the cost responsibility by customer classes.

The system-wide cost of service allocations will identify each class' (residential, commercial, industrial, etc.) responsibility for costs based on an analysis of each class' flow and strength. This allocation will yield the total cost of service by customer class. Each class' cost of service will then be compared with existing rate revenues. Black & Veatch will analyze this comparison to identify the degree of adjustment that is needed in each class for full wastewater service cost recovery.

Our financial and engineering expertise enables us to develop defensible rate structures, either in traditional forms or, when appropriate, innovative forms to address specific needs and circumstances. Black & Veatch's will design wastewater rates that are based on sound rate making principles which can be supported before regulatory agencies, commissions, councils, customer groups, or courts of law.

Development of Alternative Sewer Rate Structures

There is no unique fair and equitable method of allocating costs. The SWRCB recognizes this and this allows us flexibility to design rates that meet the City's requirements. Rate design should primarily be based on cost of service methodology. However, other judgement factors such as, general public reaction to changes in rates; the impact of shifts in the cost burden from one group of customers to another; the pressure of special interest groups; and other factors need to be considered. To this end, we will develop alternative rate structures, with particular emphasis on the single family residential customers. We will assist the City in selecting a rate structure that will provide the maximum degree of equitability among customers, consistent with local practice and conditions.

Stakeholder Involvement

Overall, the stakeholder involvement program's role is to provide forums for identifying the main areas of public concern and roadblocks to acceptance early in the study process. When educated about the issues, problems, and impacts, stakeholders will support a revenue program developed with their input. This significantly aids in obtaining political approval and implementing the program.

Therefore, we have included Katz & Associates on our team to manage the stakeholder involvement program. Our experience indicates that an independent third party facilitator increases the participation and support from stakeholders. The City may choose to carry out the tasks assigned to Katz & Associates. Black & Veatch will provide the technical support at stakeholder meetings. An important part of this program is selecting the members of the stakeholder group, laying the groundwork for their participation, expectations, and role. Katz & Associates, can work with City staff in convening the stakeholder group. At a minimum, the group will include residential, commercial, and industrial users.

Development of Financial Planning/Rate Models (Optional)

Black & Veatch has developed a financial planning computer model (BV-Plan Model) that will provide up-to-date financial planning and rate design information about the City's wastewater utility. At the City's option, Black & Veatch will design the model to specifically recognize the unique needs, characteristics, and information base of the City's wastewater system. We can provide training and consultation, rework to reflect future operation changes, and make special presentations. Some of the features of the model developed in Excel and Lotus are:

- Allows files to be consolidated so that changes and updates are automatically recalculated in all files.
- Provides planning estimates for up to ten years.
- Furnishes an on-line customized Help Manual that is accessed via a Windows icon.
- Allows users to manipulate several different variables to create unlimited scenarios through a single data file.
- Produces customized reports and graphs through a separate Graphics Worksheet.

Scope of Services

Based on our understanding of the City's Request for Proposals (RFP), the City's prior cost of service study, and responses obtained from the City to the proposer's questions, we propose the following tasks to address the City's needs.

Project Management

This project component includes general project coordination, staff direction, administrative activities and project meetings throughout the course of the project.

Task 1 – Project Management

1.1 Coordinate project activities among Black & Veatch staff, subconsultant and the City Project Team. Provide direction to staff as required to meet project objectives and

deadlines. Ensure adequate levels of staff throughout the course of the project. Review all study-related work and provide overall quality assurance.

1.2 Assist City staff in presenting study results to various elected officials, SWRCB, and the public.

1.3 Perform general administrative duties, including client correspondence, billing, and project documentation.

Task 2 – Meetings (Excludes Stakeholder Meetings)

The Black & Veatch team will meet with the City on a frequent basis throughout the study to ensure on going communication. These meetings will include:

2.1 ***Project Initiation Meeting.*** Attend a Kick-off meeting with the City project team at the beginning of the study to establish goals, to identify major interests and concerns, and to discuss activities that involve the public. The session will also facilitate discussions of the overall approach and strategies that will be used by the City and Consultant during the course of the project, reporting requirements, and project schedule.

2.2 ***Mid-Course Project Meetings.*** Black & Veatch will conduct mid-course meetings to discuss the course of the study and to seek direction. We will review issues, alternative rate structures and the schedule of rates. We will also discuss the impacts on customer groups and elicit feedback.

2.3 ***Draft Review Meetings.*** It is expected there will be two such meetings. We will review the City's comments and discuss necessary modifications.

2.4 ***Public Hearing Meeting.*** Present final report findings and recommendations at public meetings of the City Council.

Identification and Development of Issues

Task 3 – Identification and Development of Issues

Several key issues that are relevant to the cost of service and rate setting process need to be identified and clearly defined. We will work with the stakeholder group to identify issues. We will analyze the issues, develop solutions and present them to City staff and the stakeholder group. This is an important element of the study and includes the following subtasks:

3.1 Develop a stakeholder questionnaire, which will cover all areas where input is desired. Schedule and conduct fifteen stakeholder interviews with identified representatives. Develop an issues matrix at the conclusion of the interviews. In addition a summary report will be prepared.

3.2 Define issues in conjunction with the City staff and the stakeholder group. Some of the issues that will be considered are:

- Fairness and Equity in the existing rate structure and rates
- Appropriateness of the existing cost of service allocation methodology
- Appropriateness of existing customer classifications
- Evaluation of size and timing of capital projects

3.3 Analyze selected issues and provide solutions. Discuss the solutions with the City staff and the stakeholder group, seek input, and provide recommendations.

Background Review

Task 4 – Background Review

This project component will involve collection of pertinent data for the study, discussion of any relevant background information, and review of data. Specific subtasks include:

4.1 Prepare an initial request for financial and operational data and other pertinent information needed prior to the first meeting with staff representatives. Maintain a file of all documentation gathered.

4.2 Review data pertaining to SWRCB requirements, prior cost of service study, City's 10-year financial plan, rate resolutions, and all other relevant policy issues. In addition, review financial and statistical data and prepare preliminary analyses of data and information obtained from the initial data collection activity. Review City's billing information and provide if required, guidelines for preparation of billing summaries.

MWWD Operational Review

Task 5 – Operational Review

This project component will involve data collection specific to the operational aspects of MWWD. Collection of operational data will provide a thorough understanding of the operating characteristics of the wastewater system with reference to system capacity, operational policies and procedures, plant loadings, wastewater system revenues and expenditures, CIP and so on. Specific subtasks include:

5.1 Review the City's CIP for reasonableness of schedule. We will also review the City's planning documents for City's growth needs and capacity provided.

5.2 Evaluate capital improvement financing methods and develop financing alternatives including long-term debt, annual operating revenues, system development charge revenues, funds on hand and direct contributions.

5.3 Review relevant financial data to estimate revenues based on current rates and fee levels, incorporating the projected number of customers and service requirements. Review and project revenues from miscellaneous sources such as interest earnings, miscellaneous service fees, or other sources.

5.4 Develop annual revenue requirements of the City taking into consideration, factors such as inflation, routine capital expenditures, annual operational expenditures, system growth, debt service, and other cash obligations.

5.5 Develop future cash flow analyses for a five-year study period (or as designated by the City) showing application of revenue under existing rate levels and the revenue adjustments required. Such an analysis is imperative to meet the estimated future annual revenue requirements.

5.6 Evaluate and recommend reserve balance that needs to be maintained in the City's operating and capital funds.

Review of MWWD's Current Sewer Service and Capacity Charges

Task 6 – Review of Current Sewer Service and Capacity Charges

A thorough review of the City's existing sewer service and capacity charges is essential to obtain insights into issues of equitability, cost recovery, and conservation effect. In addition, we will compare MWWD's current sewer service and capacity charges with those of comparable U.S. cities to review cost allocation methodologies and trends. Black & Veatch conducts bi-annual sewer and water surveys and has a wealth of information to perform comparative analysis. Specific subtasks include:

6.1 Review MWWD's existing sewer service and capacity charges for equitability among the different customer classes. Evaluate capacity charges to determine if existing and potential users pay their fair share of costs.

6.2 Compare the City's sewer service and capacity charges with those of other comparable cities to determine the reasonableness of charges and tabulate the findings for inclusion in the study report.

6.3 Review cost of service allocation methods used in other comparable cities to obtain insights into the commonly used methodologies.

Allocation of Costs of Service to Cost-Causative Components

Task 7 – Allocation of Costs of Service

The City's projected cost of service for a representative test year (within the study period) will be allocated to cost-causative components of flow and strength. This task requires the classification of costs and the allocation of costs to cost-causative concepts. The cost allocations will be in accordance with generally accepted utility practices. Specific subtasks include the following:

7.1 Determine appropriate functional classifications of costs for cost allocation purposes. Such classifications could include, sewer collection costs, sewer treatment cost factors (COD, TSS), and general, administrative, and overhead costs.

7.2 Determine actual cost of service for the wastewater enterprise that needs to be recovered from users. The cost of service determined will be revenue requirements net of miscellaneous revenues and as indicated in Task 4, will reflect reserve and rate stabilization requirements.

7.3 Allocate the cost of service to cost-causative components. For wastewater, cost components include volume, strength (COD and TSS), and customer costs. In addition infiltration and inflows will also be considered. These will represent the revenue requirements to be met from wastewater charges and fees over the five-year study period.

Allocation of Cost-Causative Components to Customer Classes

Task 8 – Allocation of Costs to Customer Classes

Black & Veatch will review existing wastewater customer classifications for appropriateness, review and analyze historical customer class characteristics, and allocate cost of service to customer classifications. Specific subtasks include the following:

8.1 Review existing customer class designations to determine their appropriateness and recommend revised or new customer class designations as needed.

8.2 Review and analyze historical wastewater contribution and strength characteristics by customer class or subclass. Estimate the relative responsibility of each customer class for each of the functional cost elements.

8.3 Distribute the cost of service component costs to the various customer classifications, identified in subtask 7.1 above, using a unit cost approach, on the basis of the relative responsibility of each classification for service provided.

8.4 Compare current revenues under existing rates by each customer class with the allocated cost of service to determine:

- the adequacy of present revenue levels for each class
- the adjustment in rates required to equitably distribute costs to the respective classes of customers for the wastewater system.

8.5 Determine a schedule of wastewater rates in compliance with Proposition 218, for the different customer classes based on the unit costs and cost allocations determined in Task 8.3.

Development of Alternative Municipal Sewer Rate Schedules

Task 9 – Develop Alternative Municipal Sewer Rate Schedules

Black & Veatch will evaluate the City's existing wastewater rate structure and develop alternative rate structures. The alternative rate structures will be designed to fully recover each customer class's share of costs. The following subtasks will be performed:

9.1 Evaluate the City's existing wastewater rate structure for equitability among user classes and for reasonableness.

9.2 Develop alternative rate structures to fully recover the costs from each customer class. The City's current sewer rate structure is based on flow and SS. We will

propose alternative rate structures that address factors such as the COD parameter; actual and winter usage of water with and without upper limit, in the case of single family residential users. Other alternatives may include uniform rates, tiered rates considering water conservation, extra strength surcharges, and other issues as deemed appropriate. We will ensure that the alternative structures meet SWRCB guidelines, are consistent with the requirements of Proposition 218, and provide options within each customer class for revenue generation.

Present Concepts, Options, Alternatives, and Reports to Stakeholders' Group

This project component involves the formation of the stakeholder group through a stakeholder research process and presentations to the stakeholder group.

Task 10 – Stakeholder Group Formation (Optional)

Convening a stakeholder group with adequate representation from all the different customer classes and other interested parties is key to the success of the public involvement program. Specific subtasks include:

10.1 Convene a stakeholder group with members selected through a stakeholder research process, if desired. The public outreach consultant Katz & Associates will participate in an initial partnering session with City staff. The purpose of the meeting will be to determine overall strategies and timelines, as well as to identify those organizations to be approached during the stakeholder interview process and included on the PAC. It is anticipated that the final recommended list of participants will need mayoral or council approval.

10.2 Participate in stakeholder meetings to educate the PAC with respect to all aspects of the cost of service and rate design studies. Katz & Associates will participate in regular project team meetings. They will prepare and deliver updates on the progress with regard to the stakeholder review process, formation and coordination of the PAC, updates to elected officials and City staff, and all other community involvement activities. Katz & Associates will assist with the development of presentations to be made regarding the status of the project.

Task 11 – Presentation of Concepts, Options, Alternatives, and Reports to Stakeholders' Group

This project component involves presentations to the City staff, and the stakeholder group. Recognizing the importance of this study to the City, community, and the stakeholders, we will attend eleven meetings with the stakeholder group and conduct presentations on all aspects of the study covering project objectives, issues, study methodology, cost of service and rate design concepts, rate structure alternatives, recommendations, draft and final report. Past experience suggests that conducting eleven meetings in the scheduled time period would require strong commitment from stakeholders. A program with seven to eight meetings may be more appropriate. Specific subtasks include:

11.1 Prepare a series of issue papers on key topics throughout the course of the study. These papers may cover, but not be limited to, the following aspects of the study:

- Wastewater system description and background
- Treatment basics and regulations
- . Fundamentals of cost of service, SWRCB, Proposition 218 requirements
- Cost allocation methodology
- Customer class designations based on strength parameters
- Design of rate structure
- Design of alternative rate structures to address inter-class and intra-class equity, mitigation of impact, and other related matters.

11.2 Conduct audio-visual presentations on cost of service issues and ratesetting concepts to both educate and to obtain feedback from the stakeholder group.

11.3 Develop recommendations and implementation strategies based on stakeholder input.

Preparation of a Comprehensive Study Report

Task 12 – Comprehensive Study Report

This project component involves the preparation of a draft report, which provides details on the methodology, findings, and recommendations, draft report discussions, and the preparation and submission of the final comprehensive study report. Specific subtasks include:

12.1 Prepare and submit 20 copies of a draft report, including an executive summary. The report will clearly explain our findings, recommendations, the methodology used, and document the stakeholder involvement. Our report format and content will be simple and well organized with figures and charts for ease of reading and understanding by council and the public.

12.2 Discuss findings with City staff and obtain a critique of the report from the stakeholder group to determine the necessary modifications.

12.3 Prepare and submit 20 copies of the final report after incorporating City and stakeholder feedback.

Preparation of Final Revenue Plan for Submission to SWRCB

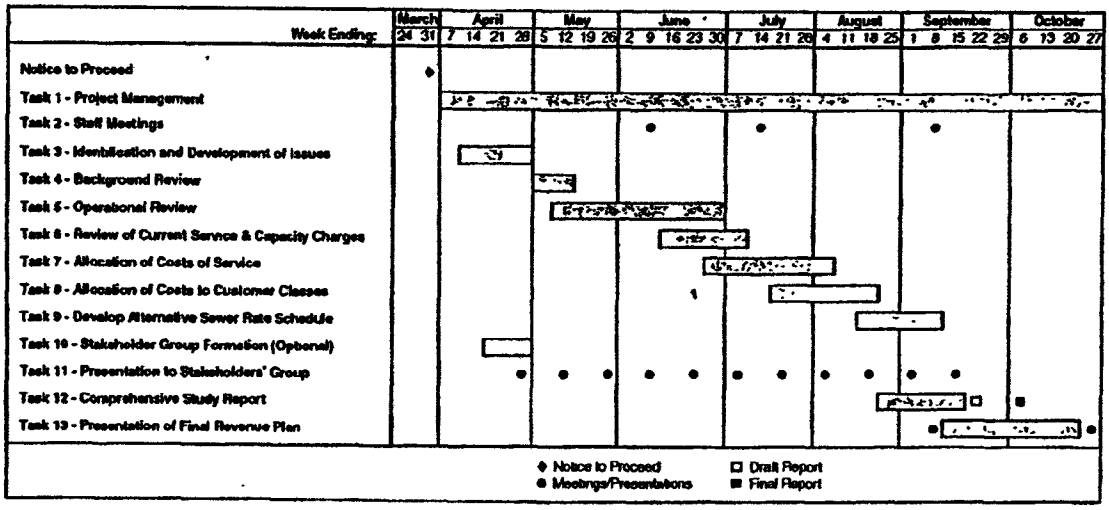
Task 13 – Preparation of Final Revenue Plan

Black & Veatch, will prepare a Final Revenue Plan document for submission to the SWRCB. The plan will be prepared in accordance with the SWRCB requirements. We will also assist the City in submitting the revenue plan and gaining SWRCB approval for the Final Revenue Plan.

Project Schedule and Deliverables

Black & Veatch has a strong track record of meeting client schedules and believe our resources and experience will enable us to meet the City's goals in a timely and efficient manner. A time-line showing the key target dates and milestones is presented below. The schedule assumes a 29-week study period with an April 1, 2000 project start date and indicates completion by October 31, 2000.

Project Schedule and Deliverables



F. Preliminary Schedule of Costs

City of San Diego
Metropolitan Wastewater Department
Fee Schedule

Task Description	Project Manager S. Pardiwala	Project Reviewer W. Stannard/ B. Foster	Policy Issues J. Boomhouwer/ D. Sain	Project Analysts P. Kumar/ K Gee/ H Tran	Clerical	Total Cost Per Task
Technical Consultant Services						
Task 1 - Project Management	40				10	$6,450
Task 2 - Meetings (Excludes Stakeholder Meetings)						$0
2.1 - Project Initiation Meeting	8		8	8		$3,240
2.2 - Mid-Course Meetings	16			16		$4,000
2.3 - Draft Report Meetings	16			16		$4,000
2.4 - Public Hearing Meeting	6			6		$1,800
Task 3 - Identification and Development of Issues	20	4	8	16		$6,540
Task 4 - Background Review	8			16		$2,800
Task 5 - MWWD Operational Review	8			32		$4,400
Task 6 - Review of Current Sewer Service and Capacity Charges	8			12	4	$2,580
Task 7 - Allocation of Cost of Service to Cost-Causative Components	8	4	4	40		$6,520
Task 8 - Allocation of Cost-Causative Components to Customer Classes	8	4		40		$5,900
Task 9 - Develop Alternative Municipal Sewer Rate Schedule	12	4	4	40		$7,120
Task 11 - Present Concepts, Options, Alternatives to Stakeholders' Group	80	8	20	110	10	$27,950
Task 12 - Comprehensive Study Report	16	4	4	60	20	$10,820
Task 13 - Preparation of Final Revenue Plan	4			16		$2,200
Total Hours	260	28	48	428	44	$86,100
Hourly Billing Rates	$150	$175	$155	$100	$45	
Subtotal	$39,000	$4,900	$7,440	$42,800	$1,980	
Expenses						$13,000
Total Project Cost						$109,100
Task 10 - Stakeholder Formation, Meetings, Facilitation (Katz & Association) [a]						$30,000 - $60,000

[a] The cost will depend on the actual scope of stakeholder services desired.

PROJECT ASSIGNMENT
Project Manager

EDUCATION
B.S., Chemical Engineering, Indian Institute of Technology, Bombay, 1974
M.S., Chemical Engineering, Arizona State University, 1976
M.B.A. (Finance and Accounting), University of California, Los Angeles, 1982

REGISTRATION
Registered Professional Engineer (Chemical and Civil): California

AFFILIATIONS
AWWA, WEF, California Municipal Finance Officers Association, Association of California Water Agencies

RELATED PROJECT EXPERIENCE
Mr. Pardiwala has over 24 years of experience in financial studies and engineering. He has extensive expertise in water and wastewater utility cost accounting, budgeting and valuation, financial and revenue planning, and assessment engineering. He has completed numerous municipal utility water, stormwater, reclaimed water and wastewater rate studies as well as system development fee studies, and has developed computerized models for these financial evaluations. Mr. Pardiwala has assisted public agencies in reviewing alternate sources of funding for capital improvements, including low interest state and federal loans and grants. He has assisted several utilities with State Revolving Fund and Water Reclamation Bond loans. Mr. Pardiwala has also assisted utilities with organizational and staffing studies including outsourcing, efficiency review and contractual arrangements. Mr. Pardiwala has a strong background in computers. His engineering education and background provides him with an excellent basis for financial studies of public and municipal utilities.

Mr. Pardiwala has been Project Manager/Project Engineer for several water and wastewater revenue program studies. These include the cities of Carlsbad, Oceanside, Chula Vista, Del Mar, Redlands, Banning, Pomona, San Fernando, Burbank, and special districts such as Elsinore Valley Municipal Water District, Sweetwater Authority, Carlsbad Municipal Water District, Ramona Municipal Water District, Victor Valley Water District, and County Sanitation Districts of Orange County. These revenue programs typically involve calculation of rates that are equitable, relatively easy to implement, and meet the political and social constraints of the agency. In the case of wastewater revenue programs, the rates had to comply with EPA regulations for grant funded agencies. Many of these studies have involved computations of scenarios showing the impact of mandatory conservation, financial impacts and sensitivity analyses of different scenarios. Financial planning is an integral element of most of these revenue programs and involve review of alternate financing of capital projects, low interest loans such as the State Revolving Fund and Department of Water Resources program such as local Water Supply, Groundwater Recharge, and Water Conservation programs. As part of developing Revenue Programs, Mr. Pardiwala has assisted in designing Reserve Funds for Operations, Replacement and Expansion.

- *Comprehensive Best Practices Study, City of Los Angeles, California*. Currently performing a comprehensive study of the City's Bureau of Sanitation (BOS) program, including operations and maintenance, capital program planning and implementation of support services. The objective of the study is to determine the efficiency and effectiveness of BOS in carrying out its mission; in meeting legal and regulatory requirements, and in its use of people, materials, space, and technology. Recommendations given to the City consist of cost and resource requirements, time to implement, and benefits.

- *Performance Appraisal of Wastewater Contract Operations, City of Rialto, California*. Project Manager for the review of privately operated wastewater treatment plant. Reviewed staffing, compliance with regulatory requirements, operating and maintenance procedure, and cost effectiveness. Drafted a new more stringent agreement that saved the City tens of thousands of dollars.

- *Water Rate Study, Connection Fees, Financing Plan, Goleta Water District, Goleta, California*. Prepared a ten-year financial plan and determined urban rates and agricultural rates. Received community input for rate implementation. Connection fees were calculated based on capitalization of future debt payments. Rate model and training were provided.

- *Water and Wastewater Rate Study, City of Rialto, Rialto, California*. Assisted City with the development of a revenue program so that the City could qualify for low interest SRF loans to fund a wastewater treatment plant expansion. Applied for these funds from the SWRCB and had the application approved in a record time of under three months. Developed a long-term water revenue program to increase equity and align rates to provide greater equity and meet Proposition 218 requirements.

- *Water, Wastewater and Reclaimed Water Study, City of Burbank, Burbank, California*. Implemented a wastewater revenue program to comply with the revenue guidelines of the State Water Resources Control Board so that the City would continue to be eligible for state and federal assistance. Implemented an automatic adjustment of rates up to the amount of inflation and pass through of costs that were not directly under the control of the City. On the water side, developed a water conserving rate structure and a financial plan to meet the ongoing expenses and expected capital expenses. The rate structure was based on peak summer usage so that users with higher demands paid in proportion to the service received. Assisted agency set up a reclamation revenue program. Prepared applications for low interest funding from the SWRCB under the Water Reclamation Bond law.

- *Impact of Change in Metropolitan Water Districts' Rate Structure, Elsinore Valley Municipal Water District, Elsinore, California and Olivenhain Municipal Water District ,Carlsbad, California*. Designed strategies for collecting Readiness-to-Serve Charges and New Demand Charges from the customers in a fair and equitable manner. This included incorporating the New Demand Charge into a connection fee.

- *Wastewater Revenue Program, County Sanitation Districts of Orange County, Fountain Valley, California*. Assisted with a study to determine fair and equitable allocations of operating costs in accordance with EPA regulations. The study involved review of various methods of allocation,

allocations of individual processes to develop allocation factors to wastewater flow, biochemical oxygen demand and total suspended solids.

- *Stormwater Financing Plans and Rates, Cities of Barstow and Visalia, California*. Developed stormwater financing plans and rates for these two cities helping create new enterprises to provide stormwater service. An important element of stormwater studies is the determination of runoff from different types of properties to determine the contributions of flow so that charges can be levied equitably.

- *Financing Plan, San Gorgonio Pass Water Agency, Beaumont, California*. Assisted the Agency with their plans to import State Water Project water into the Agency by connecting to the State Water Project line. Financing mechanisms included Farmers Home Administration (Rural Development Admission) loans, standby charges, connection fees, and debt financing.

- *Financing Plan, Elsinore Valley Municipal Water District, Elsinore, California*. Responsible for determining connection fees by zone to assign costs equitably. The connection fee was calculated by different major components such as source of supply, transmission, storage, treatment, pump stations, and distribution. Project schedule, interest earnings and inflation were considered in determining the fees and projecting fees for future years.

- *Water, Wastewater, and Reclaimed Water Revenue Program, City of Carlsbad, Carlsbad, California*. Participated in a Citizen's Review Committee Process to educate and solicit input from that committed to develop a revenue program that would be acceptable to the community. Issues such as reclaimed water discounts, conservation rates, equity of water and wastewater rate structures for multi-family units and capital financing were considered in the process.

- *Bond Feasibility Study, City of Burbank, Burbank, California*. Assisted with writing the Official Statement, defining risks and providing an opinion on the technology, the project, project costs and schedules. Also provided financial analyses.

- *Supplemental Assessment, Big Bear Municipal Water District, Big Bear, California*. Provided assistance to levy assessments on leased property of the U.S. Government and managed by the Forest Service for the dam improvements mandated for Big Bear Lake. Also managed the original assessment of the other properties and prepared a refund program for over 35,000 accounts after the District received a grant under the Davis-Grunsky Act.

- *Wastewater Rate Study, City of Encinitas, Encinitas, California*. The City is served by two wastewater agencies with customers billed on the basis of EDUs. The EDU definitions were reviewed, revised and the customer database updated. In addition we reviewed connection fees, annexation fees and reclamation fees. A subsequent revision to the rate structure consisted of billing all customers based on water consumption. Residential users were billed based on winter water use to encourage conservation and provide greater equity.

- *Impact of Change in Metropolitan Water Districts' Rate Structure, Elsinore Valley Water District, Elsinore, California*. Designed strategies for collecting Readiness-to-Serve Charges and New

Demand Charges from the customers in a fair and equitable manner. This included incorporating the New Demand Charge into a connection fee.

- *Valuation Study, City of Carlsbad, Carlsbad, California*. Assisted City in acquiring a wastewater company. Valuation of physical wastewater facilities was completed to determine an appropriate amount of depreciation or fixed asset replacement amount to be set aside each year.
- *Valuation Study, City of Chino, Chino, California*. Performed a valuation study for the City to help in the acquisition of a water company. The facilities of the Water Company were old and dilapidated. The main value of the company was the water rights. Valued these by several different mechanisms.

In addition to the individual project descriptions shown above Mr. Pardiwala has assisted as Project Manager or Project Engineer with several other studies including the following:

Obtain loans from the State Revolving Fund. These include reclamation projects for Orange County Water District, Cities of Burbank and Pasadena, wastewater projects for Cities of Corona and Pomona, and backup power for City of Riverside. These projects included applications, financial and economic analyses, environmental, conservation and other issues required for eligibility.

Collection of wastewater service charges on the tax roll. This involves setting rates and defining charges for individual parcels to be sent to the County Auditor-Controller's office reading, processing, creation of County Assessor's data and the tax roll data is done in-house. Mr. Pardiwala has wide experience in this area having worked with data for the Counties of Ventura, Los Angeles, Orange, San Bernardino and Riverside. He has managed special assessment projects for Simi Valley Sanitation District, City of Culver City, City of San Fernando, Big Bear Municipal Water District, San Gorgonio Pass Water Agency and Dana Point Sanitary District.

PUBLICATIONS/PRESENTATIONS

"Strategies for Gaining Public Acceptance of Water Rate Increases and Restructurings," with J.R. Leserman and R.W. Howell, AWWA Annual Conference, June 1991.

"Gaining Acceptance of Utility Rate Increases," with J.R. Leserman, Public Works, June 1992.

"State and Federal Funding," CWEA State and Federal Funding, November 1998.

"Are You Collecting All of Your Miscellaneous Fees?," AWWA Presentation, April 1999.

PROJECT ASSIGNMENT

Project Staff

EDUCATION

B.A. (English), Madurai-Kamaraj University, India, 1984
M.A. (English), University of Madras, India, 1986
M.Phil. (English), University of Madras, India, 1990
M.B.A. (MIS & Marketing), University of California, Riverside, 1998

RELATED PROJECT EXPERIENCE

Ms. Kumar has conducted feasibility, utilization and market research studies. Her areas of expertise include economic analysis, business analysis and strategic planning. At Black & Veatch, Ms. Kumar has been involved in the following projects:

- *Water Customer Service Reengineering Study, City of Phoenix, Phoenix, Arizona*. Recently completed Activity Based Costing for the Water Customer Services Division. Identified core activities performed in the division, allocated employee time across core activities, identified relevant overhead costs, and allocated direct labor and materials cost and indirect overhead costs across the core activities. Determined unit cost per activity based on the total cost per activity and the annual activity volume.

- *CIP/IMP Staffing Study, City of Palo Alto, Palo Alto, California*. Involved in performing comparative analysis of CIP Expenditures/CIP Engineering Cost ratio and CIP Expenditures/CIP FTE ratio for six different cities, and determining appropriate staffing for the City of Palo Alto's Infrastructure Management Program.

- *Comprehensive Best Practices Study, City of Los Angeles, California*. Currently performing a comprehensive study of the City's Bureau of Sanitation (BOS) program, including operations and maintenance, capital program planning and implementation of support services. The objective of the study is to determine the efficiency and effectiveness of BOS in carrying out its mission; in meeting legal and regulatory requirements, and in its use of people, materials, space, and technology. Recommendations given to the City consist of cost and resource requirements, time to implement, and benefits.

- *Legal Agreement Review, Long Beach Water District, Long Beach, California.* Conducted a cost analysis for the provision of replenishment water. Study includes a review of both capital and operating costs involved in the production of tertiary treated replenishment water. Established replenishment water costs for different levels of production. Also was responsible for reviewing and recommending necessary changes to the legal agreement between the City of Long Beach and Long Beach Water Replenishment District.

- *Financial Incentives Study, City of Modesto, Modesto, California*. Developed financial incentives to reduce flow and BOD strength for the canneries in the City of Modesto. Conducted economic analysis of different options taking into account the change in revenues, and capital and operating costs in order to insure that the City has adequate funds to provide incentives. Identified the level of incentives the City could provide to the canneries.

- *Asset Replacement Study, American Bottoms, Sauget, California*. Estimated asset replacement requirements for American Bottoms' water and wastewater treatment facilities for a period of thirty years. Based on the replacement schedule, developed a cash flow analysis to estimate the levels of funding to be maintained annually in the Repair and Replacement Fund.

- *Goleta Reclaimed Water Connection Fees, Goleta Water District, Goleta, California.* The Goleta Water District had constructed a reclaimed water plant during the early nineties to ease impacts of the drought. The connection fee was initially based on anticipated plant output. We reviewed the supply and demand to optimize plant output and reduced the connection fee to a more reasonable level.

- *Anthem Contract Agreement Review, City of Phoenix, Phoenix, Arizona*. Conducted impact analysis for the proposed Anthem development project. Conducted Asset Estimate for Water Infrastructure – both Backbone and Distribution network- for the proposed development. Reviewed contract agreement between City of Phoenix and developer.

- *Financial and Economic Studies, Elsinore Valley Municipal Water District, Lake Elsinore, California* Currently involved in investigating alternative methods of charging wholesale customers in the district. The study also involves cost of service analysis relating to major transmission line, which supplies water to the district. In addition, the district's share of Readiness-To-Serve (RTS) charges and the standby charges collected from the parcels will be estimated.

- *Water and Wastewater Rate Study, City of Cloverdale, Cloverdale, California*. Currently assisting the City in reviewing the rate structures and rates for the water and wastewater enterprises. As part of the study we reviewed the capital improvements program, reviewed the strength characteristics of the different classes of customers, and determined revenue requirements. We also assisted the City in streamlining their customer classifications and account information. The study involves a cost of service analysis, five-year cash flow analysis, determination of the financial responsibility of the different customer classes based on loadings and water usage patterns, and the design of water and sewer rates for the different customer classes.

Doug Sain

Education

Urban Studies & Planning - Bachelor of Arts
University of California, San Diego

Affiliations

San Diego Chapter of the American Red Cross
Children's Hospital
Mayor Golding's San Diego 2000 Committee.

Project Involvement

- *Housing Trust Fund Fee cut*
- *Redevelopment Agency projects*
- *Selected Committee on Government Efficiency and Fiscal Reform*
- *State Route 56*
- *Mid-City Transportation Corridor Study*
- *San Diego Convention Center and Qualcomm Stadium expansion*
- *Regional planning of the North City Future Urbanizing Area*

Doug Sain recently formed a government affairs consulting practice after more than eight years of City of San Diego political and policy consulting. As an independent consultant, Doug provides government, public affairs, and imaging consulting with an emphasis on public infrastructure and financing.

Most recently, Doug served three consecutive years as the City of San Diego's Council Committee Consultant on Natural Resources and Culture. In this role, he provided the Council and public with policy analysis about matters before the Committee, such as the City's water, wastewater, solid waste, regional parks, and hotel-tax policies. Through this role he had extensive interaction with the Mayor's office, Councilmembers, City Attorney, City Manager and respective City Department leadership, other municipalities, Board-members and staff of the San Diego County Water Authority, Metropolitan Water District of Southern California, California Department of Health Services, U.S. Bureau of Reclamation and organizations like the Southern California Water Committee, Greater San Diego Chamber of Commerce, BIOCOM, Building Industry Association, Sierra Club, League of Women Voters, and Community groups.

Some of the specific issues that Doug has been directly involved with were water transfer and wheeling agreements and State legislation; CALFED Bay-Delta planning; MWD: Strategic Plan, Long Range Financing Plan, Inland Feeder, and Eastside Reservoir audit; SDCWA: Water Rate Study, Emergency Storage Project and Infrastructure Access Charge, voting code revisions, and Colorado River issues; and, City of San Diego: Strategic Plan for Water Supply, alternative water supplies, $773 million water rate increase, North City and South Bay water reclamation, solid waste financing plan, Federal Ocean Pollution Reduction Act and NPDES permit, Sea World lease expansion, and Council Policy 100-03 (TOT) revision.

Prior to his work as the NR&C Committee Consultant, Doug did extensive land use policy work with the City Council. He served as the Councilis Land Use and Housing Committee Consultant, Legislative Analyst to Councilmember Harry Mathis, Council Representative to Tom Behr, early work as a speechwriter to Real Estate Consultant Sanford Goodkin, commercial real estate broker, and construction supervisor.